

|                                      |                   |   |   |
|--------------------------------------|-------------------|---|---|
| Examination Outline Cross-reference: | Level             | RO  | X |
|                                      | Tier              | 1   |   |
|                                      | Group             | 1   |   |
|                                      | K/A 00007 EK3.01  | Actions contained in the EOP for Reactor trip |   |
|                                      | Importance Rating | 4.0   |   |

Proposed Question: Common 1

The following plant conditions exists at the time the control room team transitions out of E-0 to ES-0.1:

- RCS Pressure is 2100 psig and rising slowly
- Pressurizer Level is 23% and stable
- Avg Tave is 542F and stable
- Aux Feedwater Flow is 100 gpm to each SG.
- IRPIs for two control rods indicate they are greater than 7.5 inches
- PICS indicate that both rods are at 20 steps
- RCS boron is 1000 ppm

Based upon the above indications, the operators should emergency borate approximately:

- A. 150-175 gallons
- B. 300-325 gallons
- C. 450-475 gallons
- D. 900-925 gallons

Proposed Answer: D

Explanation (Optional): ES-0.1 requires that you emergency borate 150 ppm for every rod greater than 12 steps. Two rods require that increase RCS boron by 300ppm. Boration Tables thumbrules require 3 gallons of boric acid to increase RCS boron by 1ppm.

- A. Is incorrect because you emergency borate 150 ppm per stuck rod.
- B. Is incorrect because you must emergency borate to raise RCS boron by 300ppm not 300

gallons.

- C. Is incorrect because you borate this amount for each rod. Not each rod greater than one stuck rod which was required by the previous revision of the procedure.
- D. Is correct based upon explanation above.

Technical Reference(s): ES-0.1, step 6 b,RNO (Attach if not previously provided)

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Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # X (Note changes or attach parent )  
IPEC-OPS-00761IP

New \_\_\_\_\_

Question History: Parent used on Audit Exam for ILO class

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 1,10

55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 1  |       |
|                                      | Group             | 1  |       |
|                                      | K/A 00008 AK1.02  | Changes in Leak Rate<br>with changes in Pressure |       |
|                                      | Importance Rating | 3.1  |       |

Proposed Question: Common 2

A PORV has failed open on the pressurizer and the block valve cannot be closed. The failed open PORV causes RCS pressure to drop and stabilize at 1200 psig.

Which of the following factors will cause the leak rate from the PORV to lower:

- A. Pressurizer level rises as the pressurizer goes solid.
- B. PRT rupture disc ruptures while the PORV is passing steam
- C. Instrument Air is isolated to containment during Phase A isolation.
- D. An SI pump is stopped during the SI flow reduction in ES-1.2, Post LOCA Cooldown and Depressurization.

Proposed Answer: D.

SI pump is stopped during the SI flow reduction in ES-1.2, Post LOCA Cooldown and Depressurization.

Explanation (Optional):

- A. Is incorrect—as level increases this will tend to increase RCS pressure which increases break flow.
- B. Is incorrect. If the rupture disc ruptures than the back pressure is reduced which causes increased flow from the PORV.
- C. Is incorrect because isolation of Instrument air has no effect because the PORVs use nitrogen and has failed open.



| Examination Outline Cross-reference: | Level               | RO   | SRO |
|--------------------------------------|---------------------|--|-----|
|                                      | Tier #              | 1  |     |
|                                      | Group #             | 1  |     |
|                                      | K/A 000009 G 2.4.35 | <b>Knowledge of local auxiliary operator tasks during emergency operations including system geography and operational implications</b> |     |
|                                      | Importance Rating   | 3.3  |     |

Proposed Question: Common 3

The following plant conditions exist following a small break LOCA:

- RCS Pressure is 1200 psig
- RCS is Saturated
- Off-site power is not available
- 21 and 22 EDGs have energized their respective busses.
- 23 EDG was OOS for maintenance
- Containment Pressure is 4.2 psig
- Team has transitioned to ES-1.2, Post LOCA Cooldown and Depressurization.

Based upon the above plant condition the NPOs will energize the following MCCs:

- A. MCC 27A and MCC-28
- B. MCC-29A and MCC-28A
- C. MCC-24A and MCC-29A
- D. MCC-24A and MCC-27A

Proposed Answer: C MCC-24A and MCC-29A

Explanation (Optional): MCC-28 and MCC-28A are not energized if containment is adverse and are not energized if on the EDGs. MCC-27A is off bus 6A which is powered from the 23 EDG.

- A. Is incorrect because Bus 6A is not energized and MCC-28 is not energized if containment is adverse.
- B. Is incorrect because MCC-28A is only energized on off-site power is available and containment is not adverse.
- C. Is correct
- D. Is incorrect because Bus 6A is not energized.

Technical Reference(s): ES-1.2, step 1 RNO (Attach if not previously provided)

IP2-SOD-038 AC Power  
Distribution

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X  
 Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 10  
 55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
|                                      | Tier #            | 1   |       |
|                                      | Group #           | 1   |       |
|                                      | K/A 000011 EK3.10 | <b>PTS limits on RCS Pressure and Temperature</b> |       |
|                                      | Importance Rating | 3.7   |       |

Proposed Question: Common 4

A LOCA occurred 25 minutes ago and the following plant conditions exist:

- RCS Pressure is 310 psig
- RCS Tcold on loop 21 is 220 F
- RCS Tcold on loops 22-24 is 210 F
- Containment Pressure is 10 psig
- RCPs are secured.
- All SI System Pumps are running
- No RHR Flow is indicated
- RWST level is 20 feet
- E-0 Attachment 1 is complete.

Using the attached Critical Safety Function, determine if integrity is being challenged?

- A. Integrity is challenged and an Orange Path exists. Enter and complete FR-P.1
- B. Integrity is not being challenged because RCS Pressure is low.FR-P.1 does not have to be entered.
- C. Integrity is challenged and a Red Path exists. Enter and complete FR-P.1.
- D. Integrity not being challenged because both RHR pumps are running.FR-P.1 does not have to be entered.

Proposed Answer: C

Explanation (Optional):

- A. Is incorrect because a Red Path exists.
- B. Is incorrect because pressure is high enough that hoop stresses are a problem.
- C. Is correct
- D. Is incorrect –PTS is challenge because pressure is not low enough to cause RHR flow.b

Technical Reference(s): FR-P.1,step 1 (Attach if not previously provided)

F-0.4-CSFST for FR-P.

Proposed References to be provided to applicants during examination: F-0.4 CSFST

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis x

10 CFR Part 55 Content: 55.41 5,10

55.43 \_\_\_\_\_

Comments:

|                                      |                   |   |       |
|--------------------------------------|-------------------|---|-------|
| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|                                      | Tier              | 1   |       |
|                                      | Group             | 1   |       |
|                                      | K/A 000015 AA2.08 | When secure RCP on high bearing temperature |       |
|                                      | Importance Rating | 3.4   |       |

Proposed Question: Common 5

The plant is operating at 100% power when the following conditions exist after an abnormal condition occurred:

| Temperature                       | 21 RCP | 22 RCP | 23 RCP | 24 RCP |
|-----------------------------------|--------|--------|--------|--------|
| Highest Motor Bearing Temperature | 204 F  | 178 F  | 189 F  | 173 F  |
| Seal Inlet Temperature            | 187 F  | 176 F  | 201 F  | 179 F  |
| Stator Winding Temperature        | 195 F  | 184 F  | 210 F  | 189 F  |

Which ONE of the following set of actions must be taken?

- A. Immediately Trip the Reactor, then trip 23 RCP.
- B. Perform a rapid Plant Shutdown and stop 23 RCP prior to leakoff temperature reaching 225 F.
- C. Perform a rapid Plant Shutdown and stop 21 RCP prior to motor bearing temperature reaching 225 F.
- D. Immediately Trip the Reactor, then trip 21 RCP.

Proposed Answer: D

Explanation (Optional):

- A. Is incorrect-23 RCP should not be tripped because stator winding limit is 250F.
- B. and C are incorrect-conduct plant shutdown in accordance with the POP with goal of stopping affected RCP prior to trip criteria.
- D. Is correct-IATT step 4.1 limits have been reached on the motor bearing temp.

Technical Reference(s): 2-AOP-RCP-1, IATT step 4.1 (Attach if not previously provided)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # X INPO-22799(Note changes or attach parent)  
New \_\_\_\_\_

Question History: DC Cook Dec NRC Exam

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 3,10  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | SRO |
|--------------------------------------|-------------------|--|-----|
|                                      | Tier #            | 1  |     |
|                                      | Group #           | 1  |     |
|                                      | K/A 000022 AA2.01 | <b>Whether a charging line leak exists</b> |     |
|                                      | Importance Rating | 3.2  |     |

Proposed Question: Common 6

The following plant conditions exist:

- Letdown flow is 75 gpm
- Letdown Temperature on TE-130 is rising
- Charging Flow has risen from 54 gpm to 68 gpm
- Seal Injection Flow has lowered from 8gpm to 6 gpm per pump
- Charging Pump speed is at 100%
- VCT level is lowering
- Pressurizer Level is lowering
- Gaseous particulate radiation recorders (R-41 and R-42) are normal

Based upon the above indications, a leak exists on:

- A. Letdown line inside containment
- B. Charging line inside containment
- C. Charging line outside containment
- D. Seal Injection Line outside containment.

Proposed Answer: C

Explanation (Optional):

- A. Is incorrect because letdown flow would have decreased if upstream of the flow transmitter or decreased if downstream of the flow transmitter.
- B. Is incorrect because letdown temperature would have decreased and containment parameters would have increased.
- C. Is correct- indications have charging flow increasing and regenerative heat exchanger increasing with containment parameters normal –places break on charging line downstream of flow transmitter but upstream of the regenerative heat exchanger outside containment.
- D. Is incorrect because seal injection parameters decreased slightly because charging flow is preferentially feeding the break.

Technical Reference(s): IP2-SOD-018 CVCS Drawing (Attach if not previously provided)

2-AOP-Leak-1

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 5,10,11

55.43 \_\_\_\_\_

Comments:

|                                      |                   |   |     |
|--------------------------------------|-------------------|---|-----|
| Examination Outline Cross-reference: | Level             | RO  | SRO |
|                                      | Tier #            | 1   |     |
|                                      | Group #           | 1   |     |
|                                      | K/A 000027 AK1.01 | <b>Definition of Saturation Temperature</b> |     |
|                                      | Importance Rating | 3.1   |     |

Proposed Question: Common 7

Which of the following conditions below represent Saturation Conditions in the Pressurizer?

- A. Pressure is 585 psig and Vapor Space Temperature is 491 F.
- B. Pressure is 2185 psig and Liquid Space Temperature is 649 F
- C. Pressure is 1685 psig and Liquid Space Temperature is 609 F
- D. Pressure is 485psig and Vapor Space Temperature is 472 F

Proposed Answer: B

Explanation (Optional):

- A. Is incorrect because the vapor space is superheated.
- B. Is correct.
- C. Is incorrect because the liquid space is subcooled.
- D. Is incorrect because the vapor space is superheated.

Technical Reference(s): Steam tables (Attach if not previously provided)

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Proposed References to be provided to applicants during examination: Yes

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_10 CFR Part 55 Content: 55.41 14  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO                             | SRO |
|--------------------------------------|-------------------|--------------------------------|-----|
|                                      | Tier #            | 1                              |     |
|                                      | Group #1          | 1                              |     |
|                                      | K/A 000029 EK1.03 | Effects of boron on reactivity |     |
|                                      | Importance Rating | 3.6                            |     |

Proposed Question: Common 8

A Loss of Feedwater ATWS has just occurred. The control room team is driving rods in. Under which condition below will reactivity be added at the quickest rate to return the reactor subcritical?

- Adding boron from the RWST at Beginning of Life using LCV-112B, Charging Pump suction from the RWST.
- Adding boron from the BAST at Beginning of Life using MOV-333, Emergency Boration Valve.
- Adding boron from the RWST at End of Life using LCV-112B, Charging Pump Suction from the RWST.
- Adding Boron from the BAST at End of Life using MOV-333, Emergency Boration Valve.

Proposed Answer: D

Explanation (Optional):

- Is incorrect-The concentration in the RWST is less than the BAST, the rate is slower and the Boron Worth is less.
- Is incorrect. The EOL case will add reactivity faster because of the increased Boron worth.

- C. Is incorrect because the boron concentration and addition rate are less than from the BAST.
- D. Is correct Boric acid flow rate, boron worth, and boron concentration is the highest under these plant conditions.

Technical Reference(s): FR-S.1, step 4 (Attach if not previously provided)  
Generic Fundamentals  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 1,6  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | SRO |
|--------------------------------------|-------------------|--|-----|
|                                      | Tier              | 1  |     |
|                                      | Group             | 1  |     |
|                                      | K/A 000038 EA1.10 | Control Room radiation monitoring indications and alarms |     |
|                                      | Importance Rating | 3.7  |     |

Proposed Question: Common 9

A Steam Generator Tube Rupture (SGTR) has occurred on 21 SG. The team has completed E-0, and has just identified and isolated 21 SG in accordance with E-3.

The control room team is cooling down by dumping steam from the intact SGs to the target point. A second SGTR occurs on 22 SG. The SGTR on 22 SG can be diagnosed by a rising indication on narrow range level and an rising indication on:

- A. Condenser Air Ejector Radiation Monitor recorder (R-45)
- B. SG Blowdown Radiation Monitor recorder (R-49)
- C. Main steam Line Radiation Monitor recorder (R-29)
- D. N-16 Radiation Monitor (R-61B)

Proposed Answer: C

Explanation (Optional):

- A. Is incorrect--No Flow in System--due to Phase A isolation valves are closed.
- B. Is incorrect--SG blowdown and sample valves isolated by Phase A
- C. Is correct
- D. Is incorrect—N-16 Rad Monitor will not detect this low level of radioactivity when shutdown this long.

Technical Reference(s):

(Attach if not previously provided)

E-0, Attach 2

E-3 diagnostics for intact SGs

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 11

55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 1  |       |
|                                      | Group             | 1  |       |
|                                      | K/A E12 EA1.2     | Operating Behavior<br>Characteristics of the<br>facility |       |
|                                      | Importance Rating | 3.6  |       |

Proposed Question: Common 10

During the performance of ECA-2.1, Uncontrolled Depressurization of All Steam generators, the following plant conditions exist:

- All four MSIVs have failed to close
- A steam break exists downstream of the MSIVs in the turbine building.
- A NPO has been directed to attempt to close the MSIVs locally.
- All SGs are 45-50% in the Wide Range
- Total AFW flow is 400 gpm. Flow was throttled to 100 gpm to each SG in E-0 because of the cooldown.
- The cooldown rate of the RCS has been 150 F in the past 15 minutes

How is the team directed to feed the SGs?

- Feedwater flow is terminated to all but a single S/G which is fed at 85 gpm.
- Feedwater flow is maintained at 400gpm until any SG narrow range level rises above 10%.
- Feedwater flow is maximized to all SGs until any S/G narrow range level rises above 10% NR level.
- Feedwater flow is reduced to 85 gpm to each S/G.

Proposed Answer: D

## Explanation (Optional):

- A. Is incorrect-Feedwater flow is not isolated to any faulted S/G when no SGs are intact.
- B. Is incorrect-this would lead to PTS and challenge vessel integrity.
- C. Is incorrect-same as B above.
- D. Is correct-aux feed flow is reduced to minimum to just cool the SG and keep SG tubes and tubesheet wet.

Technical Reference(s): ECA-2.1, step 2 (Attach if not previously provided)

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\_\_\_\_\_  
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Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X March 2003 NRC Exam  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Used on March 2003 NRC Exam

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 5,10  
55.43 \_\_\_\_\_

Comments:

|                                      |                   |   |       |
|--------------------------------------|-------------------|---|-------|
| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|                                      | Tier              | 1   |       |
|                                      | Group             | 1   |       |
|                                      | K/A 000054 AA2.05 | Status of MFW pumps, feed regulating valves and stop valves |       |
|                                      | Importance Rating | 3.5   |       |

Proposed Question: Common 11

The reactor was manually tripped from 100% power when 21 MBFP tripped and the turbine failed to run back.

All equipment operated as designed, with the exception of “A” reactor trip breaker, which failed to open.

Ten minutes after the reactor trip, the following conditions exist

- Tave is stable at 542F
- All SG levels have just entered into the Narrow range.

What is the correct status of the Main Feed Water system when the control room team carries out ES-0.1, Reactor Trip Response?

|    | 22 MBFP | Feed Reg Valves | Feedline MOVs |
|----|---------|-----------------|---------------|
| A. | Tripped | Open            | Open          |
| B. | Running | Closed          | Closed        |
| C. | Running | Closed          | Open          |
| D. | Tripped | Open            | Closed        |

Proposed Answer: C

Explanation (Optional):

- A. Is incorrect because the MBFP is still running and the feed regulating valves are closed.

- B. Is incorrect because the feedline MOVs are open.
- C. Is correct
- D. Is incorrect because the MBFP is still running ,feed regulating valves are closed, and feedline MOVs are open.

Technical Reference(s): IP-SOD-008 (Attach if not previously  
 IP-SOD-030 provided)  
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 \_\_\_\_\_  
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Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7  
 55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level              | RO  | X SRO |
|--------------------------------------|--------------------|---|-------|
|                                      | Tier #             | 1   |       |
|                                      | Group #            | 1   |       |
|                                      | K/A -000055 EK3.02 | Actions contained in the EOP for loss of on-site and off-site power |       |
|                                      | Importance Rating  | 4.3   |       |

Proposed Question: Common 12

Given the following plant conditions:

- Following a series of malfunctions, the operators are currently implementing ECA-0.0, Loss of All AC Power
- The safeguards equipment switches have been placed in trip pullout.
- The operators have commenced depressurizing the SGs.

Which of the following condition requires stopping the depressurization?

- A void is drawn in the head that causes pressurizer level to rise.
- SG NR level cannot be maintained greater than 10% in at least one SG.
- A cooldown rate of 100F/hr is exceeded.
- SG pressure lowers to 710 psig and the cooldown is stopped to do a controlled injection of the accumulators.

Proposed Answer: B

Explanation (Optional):

- Is incorrect-a void is expected if the cooldown is done at the maximum rate. Caution in the procedure tells you not to stop the cooldown.

- B. Is correct. Must ensure that the reactor has a heat sink.
- C. Is incorrect. The cooldown rate is done at the maximum rate to lower RCS pressure to minimize the leakage and also to inject the accumulators.
- D. Is incorrect-The SGs are depressurized to 210psig to prevent nitrogen injection. Injection from the accumulators is desirable because it extends time to core uncover.

Technical Reference(s): ECA-0.0 (Attach if not previously provided)

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Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank #  (Note changes or attach parent)Exam Bank IPEC-OPS-00087

New \_\_\_\_\_

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge

Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 10

55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO                                     | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 1                                      |       |
|                                      | Group#            | 1                                      |       |
|                                      | K/A 000056 AA1.10 | Auxiliary feedwater pump(motor driven) |       |
|                                      | Importance Rating | 4.3                                    |       |

Proposed Question: Common 13

The following plant conditions exist:

- A reactor trip has occurred coincident with a loss of off-site power
- 22 EDG failed to auto start
- 22 ABFP was tagged out for maintenance
- NPO has been dispatched to investigate the failure of 22 EDG
- 21 and 22 SG WR levels are 54% and lowering slowly
- 23 and 24 SG NR levels are 12% and rising slowly

The FSS and the NPO are ready to start 22 EDG. When the EDG is started and the bus is energized, the ABFP will:

- A. Not automatically start because the pump 86 relay must be reset.
- B. Automatically start without any time delay because SG levels are less than 10% in 2/4 SGs.
- C. Not automatically start because the pump was placed in trip pull out.
- D. Automatically starts after a time delay when blackout loads are sequenced on.

Proposed Answer: D

Explanation (Optional):

- A. Is incorrect-the 86 doesn't have to be reset.



| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 1  |       |
|                                      | Group             | 1  |       |
|                                      | K/A 000057 AA2.07 | Valve indication for charging pump suction from the RWST |       |
|                                      | Importance Rating | 3.3  |       |

Proposed Question: Common 14

The following plant conditions exist:

- Vital Instrument Bus 21/21A has been lost due to inverter failure.
- Pressurizer Level Channel 1 is in defeat.
- Makeup Mode Selector switch is in AUTO

The major impact in the CVCS system due to the loss of Instrument Bus 21/21A is:

- A. Letdown isolation will occur and automatic makeup will not occur and valve position indications (LCV-112A/B) will be available.
- B. Charging pump suction will shift to the RWST, a boration from the RWST will occur, and valve position indications (LCV-112A/B) will be lost.
- C. VCT level transmitter will lose power and automatic makeup will not occur and valve position indications (LCV-112A/B) will be lost.
- D. Charging pump suction will shift to the RWST, boration will not occur from the RWST, and valve position indications (LCV-112A/B) will be available.

Proposed Answer: D

Explanation (Optional):



| Examination Outline Cross-reference: | Level              | RO  | X SRO |
|--------------------------------------|--------------------|---|-------|
|                                      | Tier               | 1   |       |
|                                      | Group              | 1   |       |
|                                      | K/A 000058 G2.4.32 | Knowledge of annunciator alarms and indications and use of response instructions. |       |
|                                      | Importance Rating  | 3.3   |       |

Proposed Question: Common 15

During the night shift the OTC notices that a loss of control power is indicated to 6900kv breakers (UT3/UT4/ST6) for Buses 3, 4, 6.

Alarm Panel checks indicate the annunciators are lost to sections FAF and FDF.

Based upon these indications the team should investigate circuit breaker problems on:

,

- A. DC Panel 21
- B. DC Panel 22
- C. Instrument bus 23
- E. Instrument Bus 24

Proposed Answer: B

Explanation (Optional):

- A. Is incorrect..DC Bus 21 causes a loss of breakers 1,2,5.and loss of alarm lights to FAF and SLF.
- B. Is Correct.
- C. Is incorrect-breaker control power is off DC power not instrument bus power.
- D. Is incorrect. Breaker control power is off DC Bus not instrument Bus power.

Technical Reference(s): 2-AOP-DC-1 (Attach if not previously provided)

2-AOP-ANNUN-1

2-AOP-DC-1

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 7,10

55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO                        | X SRO |
|--------------------------------------|-------------------|---------------------------|-------|
|                                      | Tier              | 1                         |       |
|                                      | Group             | 1                         |       |
|                                      | K/A 000065 AA1.04 | Emergency Air Compressors |       |
|                                      | Importance Rating | 3.5                       |       |

Proposed Question: Common 16

Given the following conditions:

- The plant is at 100% power.
- The Instrument Air System , Station Air System and Unit 1 Station Air System are in their normal, automatic alignments.
- 11 Centac Air Compressor running supplying ALL Unit 2 Instrument Air and Station Air
- The following alarms have just been received in the control room:
  - “INST AIR LOW PRESS”, PANEL SJF
  - “STATION AIR HEADER LOW PRESSURE OR COMPRESSOR TROUBLE”, Unit 1 Flight Panel

Assuming NO manual action has been taken and no compressor trips have occurred, which ONE of the following describes ALL of the air compressors that will be running?

- A. 11 Centac Air Compressor ONLY.
- B. 21 and 22 Instrument Air Compressors and 11 Centac Air Compressor
- C. 21 and 22 Instrument Air Compressors, Unit 2 Station Air Compressor and 11 Centac Air Compressor
- D. 21 and 22 Instrument Air Compressors, Unit 2 Station Air Compressor and 11 and 12 Centac Air Compressors

Proposed Answer: C

Explanation (Optional):

“INST AIR LOW PRESS” alarms at 90 psig Unit 2 IA pressure and STATION AIR HEADER LOW PRESSURE OR COMPRESSOR TROUBLE at 95 psig Unit 1 Station Air pressure. 21/22 IA compressors start a 95 psig IA header pressure and Station Air compressor starts at 110 psig Station Air header pressure. 12 Centac Air Compressor does not auto start.

Technical Reference(s): 2-AOP-AIR-1, Loss of Instrument Air (Attach if not previously provided)  
ARP SJF Window, 1-5  
ARP Unit 1 Flight Panel, Window 2-6  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # X (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Original question used on March 2003 Exam

Question Cognitive Level: Memory or Fundamental Knowledge  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 4  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
|                                      | Tier              | 1   |       |
|                                      | Group             | 1   |       |
|                                      | K/A WE11 EK2.2    | Facility heat removal, including primary coolant, emergency coolant, decay heat removal systems, and the proper operation of these systems to the proper operation of the facility. |       |
|                                      | Importance Rating | 3.9   |       |

Proposed Question: Common 17

The following plant conditions exists two hours following a loss of coolant accident:

- Both Spray Pumps running
- All five FCU are running
- Three SI pumps are running
- RCS Cooldown rate is 150F/hr
- No RCPs are running
- RWST level is 14 feet
- Containment Pressure is 18 psig
- Adequate subcooling does not exist to terminate SI.
- Cold Leg Recirc capability was not available
- Control Room Transitioned to ECA-1.1, "Loss of Emergency Coolant Recirculation."

Identify the strategy that is **NOT** used in ECA-1.1, "Loss of Emergency Coolant Recirculation" to cope with the plant conditions above?

- A. Reducing ECCS injection flow to one train and then to a minimum to remove decay heat.
- B. Stopping both Containment Spray Pumps
- C. Dumping steam using the steam dumps to reduce the amount of break flow.
- D. Commencing a makeup to the RWST

Proposed Answer: C

Explanation (Optional):

- A. Is incorrect-this is a strategy from ECA-1.1, steps 10 and 13
- B. Is incorrect-this is a strategy used to minimize outflow from the RWST-step 4
- C. Correct—cannot dump steam under these conditions—MSIV closed and cooldown rate greater than 100F/hr
- D. Is incorrect-this is a strategy to maximum input into the RWST.

Technical Reference(s): ECA-1.1 (Attach if not previously provided)

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\_\_\_\_\_

\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # X-item 26086 (Note changes or attach parent)

New \_\_\_\_\_

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 3,10

55.43 \_\_\_\_\_

Comments: Raised cognitive level of test item in NRC bank used at Prairie Island

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 1  |       |
|                                      | Group             | 1  |       |
|                                      | K/A E04 EK2.1     | <b>Components and function and control of safety function, including instrumentation signals,, interlocks, failure modes, and automatic and manual features.</b> |       |
|                                      | Importance Rating | 3.7  |       |

Proposed Question: Common 18

Which one of the following component failures is addressed by ECA-1.2, "LOCA Outside Containment"?

- A. Failure of Tubing in the RHR Heat Exchanger
- B. Leak upstream of the RHR Pump discharge isolation valve.
- C. RCP thermal barrier rupture
- D. SGTR filling the main steam lines

Proposed Answer: B

Explanation (Optional):

- A. Is incorrect-This leakage would be to CCW which is addressed by 2-AOP-LICCW-1.
- B. Is correct
- C. Is incorrect -This leakage is also into CCW-which is addressed in 2-AOP-LICCW-1.
- D. Is incorrect-This leakage is addressed by E-3

Technical Reference(s): ECA-1.2, step 5 (Attach if not previously provided)

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X 00436  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 3,10  
X 55.43 \_\_\_\_\_

Comments:

|                                      |                   |   |       |
|--------------------------------------|-------------------|---|-------|
| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|                                      | Tier              | 1   | _____ |
|                                      | Group             | 2   | _____ |
|                                      | K/A 000060 AK1.05 | Calculation of off site<br>doses due to releases<br>from nuclear power<br>plants. |       |
|                                      | Importance Rating | 2.6   | _____ |

Proposed Question: Common 19

One of the key factors in calculating or estimating the off-site dose released due a waste gas decay tank rupture is the curie content of the tank.

The licensing limit for the curie content in a waste gas decay tank in accordance with the ODCM is :

- A. 6,000 Curies equivalent to Xe-133.
- B. 6,000 Curies equivalent to Kr-85.
- C. 29,761 Curies equivalent to Kr-85
- D. 29,761 Curies equivalent to Xe-133

Proposed Answer: D

Explanation (Optional):

Technical Reference(s): FSAR Ch 14 (Attach if not previously provided)

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\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 12  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO                                | X SRO |
|--------------------------------------|-------------------|-----------------------------------|-------|
|                                      | Tier              | 1                                 |       |
|                                      | Group             | 2                                 |       |
|                                      | K/A 000067 AA2.13 | Need for emergency plant shutdown |       |
|                                      | Importance Rating | 3.3                               |       |

Proposed Question: Common 20

The following plant conditions exist:

- The unit is at 100% Power
- All systems are properly aligned
- WINDOW SEF-4-7 (22 MAIN XFMR TROUBLE) is alarming
- The NPO sent to investigate reports smoke and fire coming from the transformer.
- Hot Spot temperature on the transformer is 135C.

Which one of the following actions should be taken:

- A. Dispatch the fire brigade to cool the transformer using water spray.
- B. Start all emergency diesel generators in anticipation of a loss of all AC.
- C. Commence a rapid unit shutdown using POP-3.1, "Plant Shutdown, Mode 1 to Mode 3"
- D. Trip the reactor and turbine, Enter E-0, "Reactor Trip or Safety Injection".

Proposed Answer: D

Explanation (Optional):

A.

Technical Reference(s): 2-ARP-SEF 4-7 (Attach if not previously provided)

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\_\_\_\_\_  
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Proposed References to be provided to applicants during examination: NONE

Learning Objective: 493 (As available)

Question Source: Bank # X-IPEC-OPS-00705  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 10  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | SRO |
|--------------------------------------|-------------------|--|-----|
|                                      | Tier              | 1  |     |
|                                      | Group             | 2  |     |
|                                      | K/A 000068 AK3.18 | <b>Actions contained in EOPs for control room evacuation for emergency task.</b> |     |
|                                      | Importance Rating | 4.2  |     |

Proposed Question: Common 21

The following plant conditions exist:

- The Control Room has been evacuated
- The reactor was tripped from the Control Room prior to evacuation.
- You have been dispatched as the second RO and are directed to maintain SG levels.
- 21 ABFP was tagged out for maintenance yesterday for bearing replacement.
- 22 and 23 ABFPs are operating.

Which of the following actions should you take to control feed to the SGs in accordance with 2-AOP-SSD-1, Control Room Inaccessibility –Safe Shutdown Control?

- Feed all four SGs to ensure even cooling of the RCS.
- Feed 22 and 23 SGs to ensure steam is available to run 22 ABFP.
- Feed 23 and 24 SGs using 23 ABFP to ensure a heat sink on the reactor.
- Feed 21 and 22 SGs by using the control handjacks on FCV-405A/B ( 22 ABFP Discharge valve to 21 and 22 SGs)

Proposed Answer: D

Explanation (Optional):

- A. Is incorrect-Feed only 21 and 22 SGs because they have the only reliable backup indication on the hot shutdown panel.
- B. Is incorrect-same as above
- C. Is incorrect-only use 23 ABFP if both 21 and 22 ABFPs are not available.
- D. Is correct

Technical Reference(s): 2-AOP-SSD-1, Notes and various steps in procedure (Attach if not previously provided)

+

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # X-November Audit Exam (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Modified from the November Audit exam

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 4,10  
 55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO                                 | X SRO |
|--------------------------------------|-------------------|------------------------------------|-------|
|                                      | Tier              | 1                                  |       |
|                                      | Group             | 2                                  |       |
|                                      | K/A E074 EA1.21   | Condensate storage tank level gage |       |
|                                      | Importance Rating | 3.7                                |       |

Proposed Question: Common 22

The following plant conditions exist:

- A small break LOCA occurred four hours ago.
- No high head SI pumps are available.
- No Charging Pumps are available.
- The team was proceeding through E-1 when CETs went above 700F.
- Team transitioned to FR-C.2, Response to Degraded Core Cooling
- Team commenced a cooldown at 100F/hr to inject the accumulators
- The team got a Condensate Storage Tank Low Level Alarm on Panel SCF after transitioning to FR-C.2.
- The team transitioned to FR-C-1 when a Red Path occurred.

While the team is addressing the Red Path on Core Cooling, the CST level drops below 2 feet. The team should

- A. Ensure LCV-1158, COND STORAGE TANK LCV, is closed.
- B. Commence Making Up to the CST using the Dump Pump while monitoring CST level every 15 minutes.
- C. Commence shifting auxiliary feedwater pump suction to city water when level lowers below 2 feet.
- D. Commence shifting auxiliary feedwater pump suction to the fire main when level lowers below 2 feet.

Proposed Answer: C

Explanation (Optional):

- A. Is incorrect-this action is taken when CST level lowers less than 19.5 feet. SCF2-3
- B. Is incorrect-CST refill should have occurred when the low level alarm occurs.  
Commence monitoring level three hours after the alarm is in at 15 minute intervals.
- C. Correct-Note in FR-C.1 NRC commitment (1.2.1)
- D. Is incorrect-Do not cross connect with fire main in EOP space.

Technical Reference(s): FR-C.1, Note prior to step 9 (Attach if not previously provided)

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2-ARP-SCF-2-3

CST Low Level Alarm

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\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 4,10

55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
|                                      | Tier              | 1   |       |
|                                      | Group             | 2   |       |
|                                      | K/A 000076 AK3.06 | Actions contained in the EOP for high RCS activity. |       |
|                                      | Importance Rating | 3.2   |       |

Proposed Question: Common 23

The following plant conditions exist:

- Plant is operating at 100% Power
- Radiation alarms and chemistry samples confirm that the RCS activity has exceeded the Technical Specification limits.
- The team has commenced a plant shutdown

In addition to the plant shutdown, which of the following actions are taken in accordance with 2-AOP-HIACT-1 to minimize the likelihood of a radiological release to the environment if a SGTR were to occur at this elevated activity?

- All the MSIV are closed after the reactor is shutdown.
- Open ALL three Letdown Orifice Isolation valves, 200A, 200B, and 200C.
- SG blowdown is secured.
- The RCS is cooled down to less than 500 F after the reactor is shutdown.

Proposed Answer: D

Explanation (Optional):

- Is incorrect. This places heat sink on the atmospherics, which is a release path to the environment.
- Is incorrect. This will exceed max allowable flow rate through demins.

- C. Is incorrect. This is not the major release path and this path also has dilution flow associated with it.
- D. Is correct. This will prevent the SG atmospheric and safety valves from passing steam to the environment.

Technical Reference(s): 2-AOP-HIACT-1, IATT step 4.2 (Attach if not previously provided)

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\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X NRC-1991  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 10  
55.43 \_\_\_\_\_

Comments:

Palisades NRC Exam-June 1999

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 1  |       |
|                                      | Group             | 2  |       |
|                                      | K/A E02 EK2.1     | Components and function and control of safety function, including instrumentation signals, interlocks, failure modes, and automatic and manual features. |       |
|                                      | Importance Rating | 3.3  |       |

Proposed Question: Common 24

The following plant conditions exist:

- 22 SG is faulted outside containment
- Reactor Trip and Safety Injection have occurred.
- 22 SG was isolated using E-2, Faulted SG Isolation
- Team entered E-1, Loss of Reactor or Secondary Coolant
- Crew determined the following parameters existed at step 11 in E-1.
  - RCS Subcooling is 120F
  - RCS Pressure is 1950 psig and slowly rising
  - PZR Level is 21% and rising slowly
  - SG NR levels are greater than 15% on 22, 23, and 24 SGs.

The control room transitioned to ES-1.1, SI Termination and placed the SI and RHR pumps in Auto.

What parameters must the operators monitor to ensure SI flow is not required?

- A. RCS Pressure and Pressurizer Level.
- B. Core Exit Thermocouples (CET's) trends and RCS Pressure
- C. RCS Subcooling and Pressurizer Level
- D. Core Exit Thermocouple (CET's) trends and RCS Subcooling

Proposed Answer: C

Explanation (Optional):

The two parameters monitored in the EOPs to ensure either the RCS is intact or SI is not required are RCS Subcooling and RCS Inventory (Pressurizer Level)

- A. Is incorrect because it looks at RCS Pressure
- B. Is incorrect –ES-1.1 monitors Pressurizer Level and subcooling—CET’s trends are part of subcooling determination.
- C. Is correct
- D. Is incorrect-because CETs aren’t used to determine if RCS is intact.

Technical Reference(s): ES-1.1, step 6 (Attach if not previously provided)

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Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # X (Note changes or attach parent)

New \_\_\_\_\_

Salem Exam –23131-Nov 2002

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X \_\_\_\_\_

10 CFR Part 55 Content: 55.41 10

55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 1  |       |
|                                      | Group             | 2  |       |
|                                      | K/A W/E 15 EA2.2  | <b>Adherence to appropriate procedures and operation in adherence with facility license and amendments</b> |       |
|                                      | Importance Rating | 2.9  |       |

Proposed Question: Common 25

FR-Z.2, Response to Containment Flooding, addresses flooding in Containment as an Orange path. Which one of the following statements describes why this condition is considered a severe challenge to a critical safety function?

- A. Cold water surrounding the reactor vessel may pose a vessel integrity problem.
- B. Critical components necessary for plant recovery may fail if submerged.
- C. pH in the sump may be too high to ensure effective iodine removal and minimize corrosion.
- D. RCS activity in the sump may cause the off-site dose limits to be exceeded if the water is transferred outside containment,

Proposed Answer: B

Explanation (Optional):

- A. Is incorrect-
- B. Is correct
- C. Is incorrect-ph would be lower not higher if containment level was higher.
- D. Is incorrect-RCS activity would be lower not higher and activity is diluted with service water.

Technical Reference(s): FR-Z.2 Basis Document

(Attach if not previously

\_\_\_\_\_ provided)  
\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank X 22844-modified two distracters  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Used on DC Cook Dec 2002 NRC Exam

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 3,10  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
|                                      | Tier              | 1   |       |
|                                      | Group             | 2   |       |
|                                      | K/A E16 G2.4.7    | Knowledge of event based procedures EOP Mitigation strategies |       |
|                                      | Importance Rating | 3.1   |       |

Proposed Question: Common 26

Given the following plant conditions:

- A LOCA has occurred
- Containment Radiation Levels are 5R/hr.

Which one of the following describes the purpose of the actions provided in FR-Z.3, Response to High Containment Radiation Level?

- Maximizes Containment cooling to prevent a loss of containment integrity with high radiation levels present.
- Ensures all Containment Phase A and Phase B valves are closed.
- Maximizes Containment Spray to reduce the iodine levels inside containment.
- Reduces radioactive contaminants in the containment atmosphere by filtering.

Proposed Answer: D

Explanation (Optional):

- Is incorrect, this action is done in E-0 and FR-Z.1, Response to Containment High Pressure.
- Is incorrect. FR-Z.3 ensures all Containment Ventilation isolation has occurred.
- Is incorrect. FR-Z.3 doesn't provide for Containment Spray Operation.
- Is correct. FR-Z.3 provides guidance for operation of the containment filtration systems.

Technical Reference(s): FR-Z.3, Response to High Containment radiation Level (Attach if not previously provided)  
FR-Z.3 Basis Document  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X NRC 23161  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_ Tied to different K/A

Question History: Salem Unit 1 NRC Exam November 2002

Question Cognitive Level: Memory or Fundamental Knowledge X  
 Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 10  
 55.43 \_\_\_\_\_

Comments: MCC-28/28A are not reset because Containment is adverse.

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
|                                      | Tier              | 1   |       |
|                                      | Group             | 2   |       |
|                                      | K/A E03 EK1.3     | Annunciators conditions and indicating signals, and remedial actions associated with post loca cooldown |       |
|                                      | Importance Rating | 3.5   |       |

Proposed Question: Common 27

Given the following plant conditions:

- A small break LOCA has occurred on Unit 2.
- Actions in ES-1.2, “Post LOCA Cooldown and Depressurization” are being performed.
- One SI Pump and three Charging Pumps are running.
- Control Room Team is maintaining a 90 F/hr cooldown rate.
- Pressurizer Level is stable and RCS Pressure is 900 psig.
- “RWST Low-Low “ level alarms are received.
- RWST level is 9.2 feet

Which one of the following describes the action required?

- A. Stop two charging pumps and establish normal charging and letdown and transfer suction to the VCT.
- B. Ensure adequate subcooling and stop the remaining SI pump.
- C. Transition to ES-1.3, Transfer to Cold Leg Recirculation
- D. Transition to ES-1.3, Transfer to Cold Leg Recirculation as long as no red or orange paths exist.

Proposed Answer: C

## Explanation (Optional):

- A. Is incorrect. Charging pumps are not secured until all SI pumps are secured and RHR pumps are not running in the injection mode.
- B. Is incorrect. This action would be taken if the crew remained in ES-1.2.
- C. Is correct.
- D. Is incorrect. Crew always transitions to ES-1.3 to maintain core cooling. ES-1.3 has priority over red or orange path procedures.

Technical Reference(s): ES-1.2 actions (Attach if not previously provided)

OAP-12,EOP Rules of usage

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Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

|                  |                 |          |                                 |
|------------------|-----------------|----------|---------------------------------|
| Question Source: | Bank #          | <u>X</u> | NRC Bank-23115                  |
|                  | Modified Bank # | _____    | (Note changes or attach parent) |
|                  | New             | _____    |                                 |

Question History: Used on Salem Unit 1 NRC exam Nov 2002

|                           |                                 |          |
|---------------------------|---------------------------------|----------|
| Question Cognitive Level: | Memory or Fundamental Knowledge | <u>X</u> |
|                           | Comprehension or Analysis       | _____    |

|                         |       |               |
|-------------------------|-------|---------------|
| 10 CFR Part 55 Content: | 55.41 | <u>4,10,8</u> |
|                         | 55.43 | _____         |

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 1  |       |
|                                      | K/A 003 K6.04     | Knowledge of the loss or a malfunction of the following will have on RCPs: containment isolation valves effecting RCP operation. |       |
| 3                                    | Importance Rating | 2.8  |       |

Proposed Question: Common 28

Given the following plant conditions:

- The plant is operating at 100% power.
- Normal letdown is isolated and excess letdown is in service.
- An inadvertent automatic containment Phase A signal occurs during I&C testing.

Which one of the following statement is correct as a result of the above conditions?

- CCW flow to the RCP bearing coolers is isolated.
- RCP seal injection flow will be maintained.
- Excess letdown flow to the VCT must be manually isolated.
- # 1 RCP seal return flow aligns to the RCDT.

Proposed Answer: B

Explanation (Optional):

- Is incorrect. CCW flow is isolated on Phase B.
- Is correct.
- Is incorrect. Excess letdown is isolated because 213 and hvc-123 fail closed when instrument

air is isolated to containment

D. Is incorrect. Seal return flow goes to the VCT.

Technical Reference(s): IP2-SOD-18 (Attach if not previously provided)

E-0 Phase A valve fail positions

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

|                  |                 |          |                                 |
|------------------|-----------------|----------|---------------------------------|
| Question Source: | Bank #          | <u>X</u> | <u>21570</u>                    |
|                  | Modified Bank # | _____    | (Note changes or attach parent) |
|                  | New             | _____    |                                 |

Question History: Braidwood July 2002 NRC Exam

|                           |                                 |          |
|---------------------------|---------------------------------|----------|
| Question Cognitive Level: | Memory or Fundamental Knowledge | _____    |
|                           | Comprehension or Analysis       | <u>X</u> |

|                         |       |               |
|-------------------------|-------|---------------|
| 10 CFR Part 55 Content: | 55.41 | <u>3,9,10</u> |
|                         | 55.43 | _____         |

Comments:

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
|                                      | Tier              | 2   |       |
|                                      | Group             | 1   |       |
|                                      | K/A 003 K3.04     | Knowledge the effects a loss or malfunction of the RCPs will have on the Reactor Protection System. |       |
|                                      | Importance Rating | 3.9.  |       |

Proposed Question: Common 29

The plant is operating at 15% power, when 21 RCP trips on overcurrent.

Based on these plant conditions, the following action is required?

- A. Conduct an orderly shutdown using POP-3.1, Plant Shutdown Mode 1 to Mode 3, because power level is below P-8.
- B. Conduct an orderly shutdown using POP-3.1, Plant Shutdown Mode 1 to Mode 3, because a manual trip is only required if we are less than 10% power.
- C. Trip the reactor and enter E-0, Reactor Trip and Safety Injection, because an automatic reactor trip should have occurred.
- D. Trip the reactor and enter E-0, Reactor Trip or safety Injection, because three loop operations are not procedurally allowed.

Proposed Answer: D

Explanation (Optional):

- A. Is incorrect because a reactor trip is required.
- B. Is incorrect because a reactor trip is required
- C. Is incorrect-no automatic trip signal was generated.
- D. Is correct. Four heat removal loops are required in Mode 1 and 2.

Technical Reference(s): 2-ARP-SAF (Window 1-7) (Attach if not previously provided)

\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 3,10  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 1  |       |
|                                      | K/A 004 K1.16     | Knowledge of physical connections and/or cause effect relationship between the CVCS system and the boric acid storage tanks. |       |
|                                      | Importance Rating | 3.3  |       |

Proposed Question: Common 30

The control room has determined that the boric acid filter is clogged.

While the boric acid filter is being replaced the team should:

- A. Place 22 BAST in service to allow a boration flow path to the RCS using 2-SOP-3.2, RCS Boron Concentration Control.
- B. Use MOV-333 as necessary to borate the RCS using 2-AOP-CVCS-1, Chemical and Volume Control System Malfunctions.
- C. Shift suction to the RWST and borate using LCV-112B using 2-AOP-CVCS-1 Chemical and Volume Control System Malfunctions.
- D. Align 21 BA Transfer Pump to bypass the BA filter per 2-SOP-3.2, RCS Boron Concentration Control

Proposed Answer: D

Explanation (Optional):

- A. Is incorrect. BA filter is common to both flowpaths.
- B. Is incorrect-BA filter is common to this flowpath.
- C. Is incorrect. This flowpath is used in EOP and 2-SOP-3.2 if emergency boration is required or plant is in cold shutdown.

D. Is correct

Technical Reference(s): ARP FBF-Window 3-2 (Attach if not previously provided)

2-SOP-3.2

IP2-SOP-SOD-18

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 3,10  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 1  |       |
|                                      | K/A 005 K5.03     | Knowledge of the operational implications of the following concepts as they apply to RHR operation: Reactivity effects of RHR fill water |       |
|                                      | Importance Rating | 2.9  |       |

Proposed Question: Common 31

The following plant conditions exist:

- The Reactor Coolant System (RCS) is being maintained at 325F and 350 psig by steam dumps.
- The Residual Heat Removal (RHR) System is being placed in service for normal cooldown mode.
- The RHR pump 21 has been running for 12 minutes
- Service water temperature is 75F
- Chemistry Lab has reported:
  - RCS Boron concentration is - 2010 PPM
  - RCS Required Boron is ----- 2000 PPM
  - RHR Boron concentration is - 1990 PPM

Should the RHR system be placed in service to the RCS?

- A. NO, RHR boron must be raised by starting the RHR pump aligned to the RWST and allowing minimum flow through the Mini-flow test lines.
- B. NO, RHR boron must be raised by starting a RHR pump and allowing flow from HCV-133 to be diverted to the CVCS HUT.
- C. YES, RHR may be placed in service as the difference in boron concentration for the small volume of the RHR system would not dilute the RCS to less than 2000 PPM.
- D. YES, RHR may be placed in service since the boron concentration is within 25 PPM and this reactivity effect will be minimal.

Proposed Answer: B

NO, RHR boron must be increased by starting a RHR pump and allowing flow from HVC-133 to be diverted to the CVCS HUT .

Explanation (Optional):

- A. Is incorrect. This flowpath will only warm-up the RHR system in accordance with 2-SOP-4.2.1.
- B. Is correct. This flowpath is used to increase the RHR boron concentration.
- C. Is incorrect-RHR boron must be greater than minimum concentration required for cold shutdown.
- D. Is incorrect RHR born must be greater than minimum required for cold shutdown.

Technical Reference(s): 2-SOP-4.2.1 (Attach if not previously provided)  
IP2-SOD-020  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # x  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 6,10  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 1  |       |
|                                      | K/A 006 G2.4.9    | Knowledge of low power/<br>shutdown implications in accident<br>(eg LOCA or Loss of RHR)<br>mitigation strategies. |       |
|                                      | Importance Rating | 3.3  |       |

Proposed Question: Common 32

The following plant conditions exist:

- The plant is on RHR at 330psig and 300F.
- 21 RHR pump is running.
- 24 RCP is running.
- All SI pumps are available and in PULLOUT.
- 21 and 22 Charging pumps are available.

A small break LOCA occurs on the RHR pump suction line. The RHR pump was cavitating and has been stopped. Letdown has been isolated. The pressurizer is empty and RCS level is lowering rapidly. The RCS is at saturation.

Based upon these conditions, the control room team should:

- A. Manually Safety Inject and enter E-0, reactor trip or Safety Injection.
- B. Enter 2-AOP-RHR-1 and manually start all available Charging and SI pumps.
- C. Enter AOI-4.2.2, LOCA when RCS Temperature at least 200F and less than 350F, and manually start all charging pumps aligned to the RWST at maximum speed.
- D. Enter AOI-4.2.2, LOCA when RCS Temperature at least 200F and less than 350F, and manually start 21 SI pump

Proposed Answer: D

Explanation (Optional):

- A. Is incorrect. E-0 is not entered under these plant conditions in Mode 5.
- B. Is incorrect. 2-AOP-RHR-1 is incorrect procedure.
- C. Is incorrect-only start if pressurizer level is greater than 14%.
- D. Is correct.

Technical Reference(s): 2-AOI-4.2.2 (Attach if not previously provided)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 8,10

55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 1  |       |
|                                      | K/A 007 K4.01     | Knowledge of PTRS design features and/or interlock which provide for: quench tank cooling. |       |
|                                      | Importance Rating | 2.6  |       |

Proposed Question: Common 33

PRT temperature has slowly risen to 200F following the PORVs cycling due to a load rejection. The plant is now stable.

What is the initial method used to clear the PRT high temperature alarm in accordance with 2-ARP-SAF for (Window 1-6), Pressurizer Relief Tank Liquid High Temperature?

- Commence pumping down PRT with the RCDT pump and refilling using makeup water.
- Allow the PRT to cool to ambient in approximately one hour.
- Commence spraying the PRT until temperature is less than 130F.
- Commence pumping the PRT using the RCDT pump while concurrently spraying the PRT.

Proposed Answer: C

Explanation (Optional):

- Is incorrect. Must reduce temperature less than 170F to use the RDCT pumps.
- Is incorrect-ARP-SAF-1-6 requires that you spray when greater than 130F.
- Is correct.
- Is incorrect. Must reduce temperature to less than 170F prior to using the RDCT pumps.

Technical Reference(s): 2-SOP-1.6, PRT Operations.1 (Attach if not previously

\_\_\_\_\_ provided)  
2- ARP-SAF-(Window 1-6)  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

|                  |                 |          |                                 |
|------------------|-----------------|----------|---------------------------------|
| Question Source: | Bank #          | <u>X</u> | IP2 Audit Exam-Oct 2004o        |
|                  | Modified Bank # | _____    | (Note changes or attach parent) |
|                  | New             | _____    |                                 |

Question History:

|                           |                                 |          |
|---------------------------|---------------------------------|----------|
| Question Cognitive Level: | Memory or Fundamental Knowledge | <u>X</u> |
|                           | Comprehension or Analysis       | _____    |

|                         |       |             |
|-------------------------|-------|-------------|
| 10 CFR Part 55 Content: | 55.41 | <u>3,10</u> |
|                         | 55.43 | _____       |

Comments:

IP2 October 2004 Audit Exam

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
|                                      | Tier              | 2   |       |
|                                      | Group             | 1   |       |
|                                      | K/A 008 A2.04     | Ability to (a) predict the impact the following malfunctions or operations of the CCW system and based (b) on the predictions, use procedures to correct ,control, or mitigate the consequence of the malfunction or operations: PRMS alarm.. |       |
|                                      | Importance Rating | 3.3   |       |

Proposed Question: Common 34

The following plant conditions exist:

- Plant is at 100% Power
- CCW Radiation Monitor, R-47, alarms
- CCW Surge Tank High Level Alarms
- RCV-017 (CCW Surge tank Vent) is open

The control team enters 2-AOP-LICCW, Leakage into CCW System, to mitigate the event.

Based upon the indications above, which of the following actions should be taken:

- A. Manually close RCV-017 because it has no automatic action associated with it to isolate the leaking Seal Water Heat Exchanger.
- B. Manually close RCV-017 because it failed to automatically close to isolate the leaking Spent Fuel Pool Heat Exchanger.
- C. Manually close RCV-017 because it has no automatic actions associated with it to isolate the leaking Waste Gas Compressor Heat Exchangers.
- D. Manually close RCV-017 because it failed to automatically close to isolate the leaking Non-Regenerative Heat Exchanger.

Proposed Answer: D

Explanation (Optional):

- A. Is incorrect because RCV-017 should have closed and the Seal Water Heat Exchanger cannot leak into CCW.
- B. Is incorrect because the Spent Fuel Pool Heat Exchanger is cooled by CCW which is at a higher pressure..
- C. Is incorrect because RCV-017 should have closed.
- D. Is correct.

Technical Reference(s): 2-AOP-LICCW-1 (Attach if not previously provided)  
 \_\_\_\_\_  
 IP2-SOD-002  
 \_\_\_\_\_  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 3,10  
 55.43 \_\_\_\_\_

Comments: Modified Braidwood exam question and tied it to new K/A.

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
|                                      | Tier              | 2   |       |
|                                      | Group             | 1   |       |
|                                      | K/A 010 K5.02     | Knowledge of operational implications of the following concepts as they apply to PZR PCS: constant enthalpy expansion through a valve |       |
|                                      | Importance Rating | 2.6   |       |

Proposed Question: Common 35

The following plant conditions exist:

- Plant is at Hot Zero Power
- Initial pressurizer pressure was 2235 psig
- PORV Block Valve 535 was inadvertently left open
- Pressurizer PORV 455C has just opened
- The operator closed the block valve
- Current pressurizer pressure is 2190 psig

Pressurizer relief tank parameters:

- Level 75%
- Pressure 6.5 psig
- Temperature 123F

What is the expected temperature indication for TE-463, PORV outlet temperature?

- A. 200 F
- B. 230 F
- C. 260 F
- D. 290 F

Proposed Answer: B  
230F

Explanation (Optional):

From Mollier Diagram temperature is 230F.  
Constant enthalpy process

Technical Reference(s): Mollier Diagram (Attach if not previously  
provided)

\_\_\_\_\_  
Steam table  
\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X INPO-19540  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History:

Question Cognitive Level: Memory or Fundamental  
Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 14  
55.43 \_\_\_\_\_

Comments: DC Cook NRC Exam May 2001

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 1  |       |
|                                      | K/A 012 A3.06     | Ability to monitor operation of the RPS, including: RPS Trip Logic |       |
|                                      | Importance Rating | 3.7  |       |

Proposed Question: Common 36

Pressurizer Pressure Channel One (PT455) has failed low at 8% power. The operator has taken action per 2-AOP-INST-1, Instrument/Controller Failures, to establish pressure control.

Which bistables will already be tripped when the operators goes to trip bistables?

- A. Low Pressurizer Pressure and OTDT for Loop 21
- B. Low Pressurizer Pressure and OPDT for Loop 21
- C. Low Pressurizer Pressure SI and SI Block Permissive
- D. Low Pressurizer Pressure and Low Pressurizer Pressure SI.

Proposed Answer: D

Explanation (Optional):

- A. Is incorrect. OTDT bistable will not be tripped.
- B. Is incorrect. OPDT will not be effected
- C. Is incorrect-The SI block permissive will not be tripped.
- D. Is correct

Technical Reference(s): 2-AOP-INST-1

(Attach if not previously

\_\_\_\_\_ provided)  
IP2-SOD-030  
\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New x

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis x

10 CFR Part 55 Content: 55.41 7  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | SRO |
|--------------------------------------|-------------------|--|-----|
|                                      | Tier              | 2  |     |
|                                      | Group             | 1  |     |
|                                      | K/A 013 A3.01     | Ability to monitor automatic operation of ESFAS including input channels and logics. |     |
|                                      | Importance Rating | 3.7  |     |

Proposed Question: Common 37

RCS pressure has lowered to less than 1940 psig during a plant cooldown. The operators BLOCK the low pressurizer pressure Safety Injection by using the block switches on CCR Panel SBF-2.

Subsequently a steamline break occurs **DOWNSTREAM** of the MSIVs on the main steam east header.

Assuming no operator action, what is the expected ESF response?

- A. Steamline isolation will always occur; an SI will not occur.
- B. Since all ESF action blocked per 2-POP-3.3, Plant Cooldown from Mode 3 to Mode 5, no automatic ESF functions are actuated.
- C. Steamline isolation and SI may occur dependent on break size.
- D. Steamline isolation may occur dependent on break size; an SI will occur when a high steamline delta P signal is generated.

Proposed Answer: C

Explanation (Optional):

- A. Is incorrect—breaksize will determine if the high steam flow signal is generated.

- B. Is incorrect only the low presssurizer pressure SI is blocked at this time.
- C. Is correct
- D. Is incorrect-the SG DP signal is generated for a steamline break upstream of the MSIVs.

Technical Reference(s): IP2-SOD-031 (Attach if not previously provided)  
 POP-3.3

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X INPO 24630  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Modified from Seabrook May 2003 NRC Exam

Question Cognitive Level: Memory or Fundamental Knowledge  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7,14  
 55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
|                                      | Tier              | 2   |       |
|                                      | Group             | 1   |       |
|                                      | K/A 022 K4.03     | Knowledge of CCS design features and /or interlocks which provide for automatic containment isolation |       |
|                                      | Importance Rating | 3.6   |       |

Proposed Question: Common 38

Which of the following properly describe the design features for the containment cooling system for a design bases LOCA event?

- A. Containment Fan Coolers start on Safety Injection Signal  
TCV-1104 and 1105 both open on SI Signal  
Containment Purge Valves get close signal from Phase A Isolation Signal  
IVSW Valves open on Phase A signal
- B. Containment Fan Coolers start on the Safety Injection Signal  
TCV-1104 and 1105 both open on SI signal  
Containment Purge Valves get close signal from Containment Ventilation Isolation signal  
IVSW Valves open on Phase A signal
- C. Containment Fan Coolers start on a Phase B signal  
TCV-1104 and 1105 go to a preset throttle position on a SI signal  
Containment Purge Valves get close signal from Containment Ventilation Isolation signal  
IVSW Valves open on a Phase B signal
- D. Containment Fan Coolers start on a Blackout signal  
TCV-1104 and 1105 go to a preset throttle position on a SI signal  
Containment Purge Valves get close signal from Containment Ventilation Isolation signal  
IVSW Valves open on a Phase B signal

Proposed Answer: B

Explanation (Optional):

Fan Cooler Units start on SI signal , TCV 1104/1105 go full open on SI if not full open, Purge valves get close signal from Containment Ventilation Isolation signal, and IVSW Valves open on Phase A signal.

Technical Reference(s): E-0 (Attach if not previously provided)  
E-0 attachment 2  
SD

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 9,10  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | SRO |
|--------------------------------------|-------------------|--|-----|
|                                      | Tier              | 2  |     |
|                                      | Group             | 1  |     |
|                                      | K/A 022 A2.05     | Ability to (a) predict the impact the following malfunctions or operations of the CCS system and based (b) on the predictions, use procedures to correct, control, or mitigate the consequence of the malfunction or operations: major leak in the CCS system. |     |
|                                      | Importance Rating | 3.1  |     |

Proposed Question: Common 39

The following plant conditions exist:

- The plant is at 100% Power
- 21, 22, 23, 25 FCU are in operation
- 24FCU is OOS because of a bearing failure.
- CNTMT BLDG FAN COOLER CNDSR HIGH LEVEL alarm occurs on CCR Safety Injection Alarm Panel
- 22 FCU is the affected FCU and has a service water leak.

Based upon the above indications and TS 3.6.6 provided, the team should enter the ARP and

- Shutdown the affected FCU, isolate SW to containment and shutdown the unit because all trains of Containment Cooling are inoperable.
- Shutdown the affected FCU, isolate SW to the affected unit and restore one train of Containment Cooling to operable within 72 hours
- Shutdown the affected FCU, isolate SW to the affected unit and restore one train of Containment Cooling to operable within one hour or be in Mode 3 in 7 hours .
- Shutdown the affected FCU, isolate SW to containment reduce power to ensure containment temperature does not heat up and exceed 130F.

Proposed Answer: B

Explanation (Optional):

- A. Is incorrect. Shutdown is not required individual fan cooler are isolated and both trains of containment spray are still operable
- B. Is correct.
- C. Is incorrect. Action statement is for all trains inoperable..
- D. Is incorrect. Do not isolate all service water to FCUs.

Technical Reference(s): TS 3.6.6 (Attach if not previously provided)

\_\_\_\_\_

2-SOP-10.3

\_\_\_\_\_

2-ARP-SMF-Window 1-2

\_\_\_\_\_

Proposed References to be provided to applicants during examination: TS 3.6.6 \_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_

New \_\_\_\_\_

X

(Note changes or attach parent)

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis \_\_\_\_\_

X

10 CFR Part 55 Content: 55.41 3,9,10 \_\_\_\_\_

55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | SRO |
|--------------------------------------|-------------------|--|-----|
|                                      | Tier              | 2  |     |
|                                      | Group             | 1  |     |
|                                      | K/A 026 K4.04     | Knowledge of CSS design features and/or interlock which provide the following: reduction temperature and pressure in containment after a LOCA by condensing steam, to reduce radiological hazard and protect equipment from corrosion damage |     |
|                                      | Importance Rating | 3.7  |     |

Proposed Question: Common 40

The following plant conditions exist:

- Unit 2 experienced a large break LOCA forty-five minutes ago.
- Containment Radiation levels are 1 R/hr on R-25/R-26.
- The team is lining up for cold leg recirc per ES-1.3, Transfer to Cold Leg Recirculation.
- Both Recirc trains are in service
- All five FCUs are in service
- 22 Containment Spray Pump was just secured at 2 feet in the RWST

Based upon the above plant conditions:

- A. Containment spray is not required because adequate containment cooling exists.
- B. Containment spray is not required because Tri-Sodium Phosphate will maintain the iodine in solution in the containment sump.
- C. Containment spray of 960 gpm should be established using MOV-889A or 889B and remain in service until containment spray has been in service for 3.5 hours.
- D. Containment spray of 960 gpm should be established using MOV-889A or 889B and remain in service until recirc spray has been in service for 3.5 hours.

Proposed Answer: C

Explanation (Optional):

Off-site dose calculations assume that containment is sprayed for 3.5 hours after the LOCA to assure dose rates are within the licensing bases of the plant.

Technical Reference(s): ES-1.3 (Attach if not previously provided)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 3,8,10  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | SRO |
|--------------------------------------|-------------------|--|-----|
|                                      | Tier              | 2  |     |
|                                      | Group             | 1  |     |
|                                      | K/A 039 K3.04     | Knowledge of the effects of a loss of the MRSS will have on the operation of: MFW Pumps. |     |
|                                      | Importance Rating | 2.5  |     |

Proposed Question: Common 41

The following plant conditions exist:

- A transient occurs
- The steam dumps failed to open.
- The SG atmospherics failed to open.
- ALL MSIVs are OPEN

The plant stabilizes on the first set of safety valves at 6% power. What will MBFP discharge pressure be if the control system is in automatic and operating properly?

- A. 1040 –1050 psig
- B. 1065 - 1075 psig.
- C. 1170 - 1180 psig
- D. 1250 - 1260 psig

Proposed Answer: C

Explanation (Optional):

Safety Valve setpoint is 1065psig and MBFP speed DP program will have a setpoint 105 – 110 psig greater than this value.

Technical Reference(s): Table 3.7-1.2

(Attach if not previously provided)

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Graph SP-2

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Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_ INPO 19210  
Modified Bank # X \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Braidwood Oct 2000 NRC Exam

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X \_\_\_\_\_

10 CFR Part 55 Content: 55.41 4,14  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | SRO |
|--------------------------------------|-------------------|--|-----|
|                                      | Tier              | 2  |     |
|                                      | Group             | 1  |     |
|                                      | K/A: 056 A2.04    | Ability to (a) predict the impact the following malfunctions or operations of the condensate system and based (b) on the predictions, use procedures to correct, control, or mitigate the consequence of the malfunction or operations: loss of a condensate pump. |     |
|                                      | Importance Rating | 2.6  |     |

Proposed Question: Common 42

Given the following conditions:

- The plant is at 50% power.
- All control systems are in their normal automatic alignments
- 21 and 22 MBFP are both running
- 21 and 23 Condensate Pumps are running
- The Condensate AUTO start circuit has not been armed yet

Which ONE (1) of the following actions is required if 23 Condensate Pump trips?

- If Reactor Power is greater than 4%, then trip the reactor and go to E-0, Reactor Trip or Safety Injection.
- Manually start 22 Condensate Pump and initiate a load reduction if necessary to maintain feed flow greater than steam flow or MBFP suction greater than 280 psig.
- Manually start 22 Condensate Pump and defeat the low pressure cutback.
- Perform SOP-20.2, Condensate System Operation, to defeat 22 Condensate Pump Auto trip and transition back to POP-2.1, Operation at Power, to stabilize Power.

Proposed Answer: B

Explanation (Optional):

- A. Is incorrect—this is trip criteria if all feedwater flow is lost..
- B. Is correct
- C. Is incorrect-you would not defeat the low suction cutback on the MBFP.
- D. Is incorrect Not armed

Technical Reference(s): 2-AOP-FW-1 (Attach if not previously provided)

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2-POP-1.3

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\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # X (Note changes or attach parent)

New \_\_\_\_\_

Question History: Modified March 2003 NRC Exam

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 4,10

55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 1  |       |
|                                      | K/A 059 A1.07     | Ability to predict and/or monitor changes in parameters (to prevent from exceeding design limits) associated with operating the MFW controls including Feed Pump Speed including normal speed for IPS. |       |
|                                      | Importance Rating | 2.5  |       |

Proposed Question: Common 43

The following plant conditions exist:

- The plant is operating at 100%.
- 21 S/G feed regulating valve is in manual.
- S/G water levels are stable.
- PT-408A main feed discharge header pressure transmitter fails low.

With no operator action, what is the effect on S/G feed pumps (SGFPs) and what automatic, protective actions will take place to protect the plant from the above failure?

- Feed pumps slow down due to pressure mismatch. Lowering S/G water levels cause reactor to trip on S/G level low-low.
- Feed pumps slow down due to pressure mismatch. Main turbine trips on S/G low-low level. Reactor trips on main turbine trip.
- Feed pumps speed-up due to pressure mismatch. Reactor trips on main turbine trip due to S/G High-High level.
- Feed pumps speed-up due to pressure mismatch. Feed pumps trip on overspeed. Main turbine trips on loss of feed. Reactor trips on turbine trip.

Proposed Answer: C

## Explanation (Optional):

- A. Is incorrect. On failure DP goes low-feed pump will speed up to raise DP and SG levels will increase and unit will trip on high SG level.
- B. Is incorrect. Is incorrect for reasons already noted
- C. Is correct,
- D. Is incorrect. Feed pump will be limited on speed and not trip due to over speed. If it were to trip the low SG level would cause the reactor to trip which would trip the turbine

Technical Reference(s): IP2-SOD-008 (Attach if not previously provided)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X INPO 24635  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Seabrook May 2003 NRC Examv

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 4,7  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
|                                      | Tier              | 2   |       |
|                                      | Group             | 1   |       |
|                                      | K/A 059 K1.04     | Knowledge of the physical connections or cause and effect relationship between the MFW and the following system: SG Level Control System. |       |
|                                      | Importance Rating | 3.4   |       |

Proposed Question: Common 44

Given the following plant conditions:

- Reactor power is 15%.
- S/G 21 NR level is 70%.
- S/G 22 NR level is 60%.
- S/G 23 NR level is 79.5%.
- S/G 24 NR level is 58%

Which one of the following automatic action sequences will directly result from the above situation?

- Turbine trip, Feed Pumps trip, and Feedwater Isolation closes all FRVs and MOVs.
- Turbine Trip, Feed Pumps Trip, and Feedwater Isolation only closes 23 FRV and MOV
- Turbine trip, Reactor trip, Feed Pump trip, and Feedwater Isolation only closes 23 FRV and MOV.
- Turbine trip, Reactor trip, Feed Pumps trip and Feedwater Isolation closes all FRVs and MOVs.

Proposed Answer: A

## Explanation (Optional):

High Level 2/3 in any 1/4 SGs will cause the turbine to trip. Since Power level is below P-8, the turbine trip will not cause a reactor trip. The high level signal will cause the operating main feed pumps to trip and all feed regulating valves and bypasses valves if open to close. Both feedpump discharge valves also close the feedline MOVs.

Technical Reference(s): 2-SOD-008 (Attach if not previously provided)

2-ARP-FAF (Window 2-4)

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_ INPO-988  
 Modified Bank # X (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Farley March 98 NRC Exam

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 4,7  
 55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
|                                      | Tier              | 2   |       |
|                                      | Group             | 1   |       |
|                                      | K/A 061 K5.01     | Knowledge of the operational concepts as they apply to AFW: relationship between AFW flow and heat transfer rate. |       |
|                                      | Importance Rating | 3.6   |       |

Proposed Question: Common 45

A reactor trip occurs from 100% power due to a loss of main feedwater.

The following conditions exist:

- All RCPs are running.
- The turbine driven AFW pump is in service feeding all the SGs.
- Both motor driven AFW pumps tripped upon startup and remain unavailable.
- The turbine driven AFW pump speed has begun to slowly lower due to a malfunctioning governor.

Which one of the following describes the impact on Pressurizer level if the turbine driven AFW pump speed CONTINUES to lower?

- A. Lowers due to less primary to secondary heat transfer.
- B. Lowers due to more primary to secondary heat transfer.
- C. Rises due to less primary to secondary heat transfer.
- D. Rises due to more primary to secondary heat transfer.

Proposed Answer: C

Explanation (Optional):



| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 1  |       |
|                                      | K/A 061 K2.02     | Knowledge of bus power supplies to the electric drive (motor driven) aux feed pumps. |       |
|                                      | Importance Rating | 3.7  |       |

Proposed Question: Common 46

The following conditions exist:

- Plant is operating at 15% power
- 21 Main Boiler Feed Pump trips
- The reactor is manually tripped
- Bus 6A feeder breaker trips on fault

What is the status of the Aux Feedwater System one minute after the Reactor Trip? Assume no operator action.

- A. 21 ABFP is feeding 21 and 22 SGs
- B. 23 ABFP is feeding 23 and 24 SGs
- C. 22 ABFP is feeding all the SGs.
- D. No ABFPs automatically started

Proposed Answer: A

Explanation (Optional):

- A. Bus 3A feeds 21 ABFP and Bus 6A feeds 23 ABFP. Only 21 ABFP is running. 23 ABFP has no power and 22 ABFP is not at rated speed and flow control valves are closed.

Technical Reference(s): IP2-SOD-038 (Attach if not previously provided)  
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\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X INPO-26114  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 4,7,  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 1  |       |
|                                      | K/A 062 A1.01     | Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the distribution system including the significance of the diesel load limits. |       |
|                                      | Importance Rating | 3.4  |       |

Proposed Question: Common 47

The 21 EDG is running following a recovery from a loss of all AC in ECA-0.0. The BOP reports current EDG loading is 2250 KW.

What is the minimum amount of load that would have to be shed from 21 EDG to be below the two-hour operational limit?

- A. 100 KW
- B. 250 KW
- C. 450 KW
- D. 600 KW

Proposed Answer: B

Explanation (Optional):

2000KW is the 2 hr load limit. Thus load must be reduced by (2250KW-2000KW) or 250 KW.

Technical Reference(s): Caution ECA-0.0 prior to step 5 (Attach if not previously provided)

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Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X 3982  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Braidwood 1997 NRC Exam

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 8,10  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 1  |       |
|                                      | K/A 063 K2.01     | Knowledge of bus power supplies to major DC Bus Loads. |       |
|                                      | Importance Rating | 2.9  |       |

Proposed Question: Common 48

125VDC Bus 22 has been lost due to a fault on the bus. Channel 2 Pressurizer Level bistables were in a tripped condition for an I&C Surveillance. All other equipment has functioned as expected. What is the effect on continued plant operation?

- A. A reactor trip occurs due to a shunt trip on the “B” reactor trip breaker.
- B. A reactor trip occurs due to an undervoltage trip on the “B” reactor trip breaker.
- C. A reactor trip occurs due to a 2 of 4 logic met for High Pressurizer Level trip.
- D. No immediate reactor trip occurs, however a 2 Hour Shutdown T.S. is entered.

Proposed Answer: B

Explanation (Optional):

RTB and BYPA are powered from DC Bus 22. RTA and BYPB are powered from DC Bus 21. The shunt trip is an energize to function trip. Unit will not trip because you only lost one channel of Pressurizer level. Additionally the level trip is a 2 of 3 coincidence.

Technical Reference(s): 2-AOP-DC-1  
2-IP-SOD-39  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank #       X        
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: IP3 NRC Exam

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis       X      

10 CFR Part 55 Content: 55.41       7        
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
|                                      | Tier              | 2   |       |
|                                      | Group             | 1   |       |
|                                      | K/A 063 K3.01     | Knowledge of the effect that a loss or malfunction of the DC Electrical System will have on the following components EDGs |       |
|                                      | Importance Rating | 3.7   |       |

Proposed Question: Common 49

The plant is operating at 100% power, when a Loss of 21 DC bus occurs. This results in loss of DC circuit breaker control power to 6.9KV buses 5,1,2.

As a result of the above event, the following will occur:

- A. 21 EDG and 22 EDG will auto start and energize Bus 5A and 2A
- B. Only 23 EDG will start but it will not energize Bus 6A
- C. No EDGs will start and only Bus 6 A will remain energized.
- D. No EDGs will start and Bus 5A and 6A will remain energized.

Proposed Answer: D

Explanation (Optional):

- A. Is incorrect. The undervoltage relays are de-energized and the EDGs will not start
- B. Is incorrect. Same reason as noted above.
- C. Is incorrect because 5A is unaffected.
- D. Is correct.

Technical Reference(s): 2-AOP-DC-1 (Attach if not previously provided)  
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\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7,8  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 1  |       |
|                                      | K/A 064 A4.06     | Ability to manually operate and/or monitor in the control room: manually starting, loading and stopping the EDGs |       |
|                                      | Importance Rating | 3.9  |       |

Proposed Question: Common 50

Given the following conditions:

- The Unit is at 100% power.
- Bus 5A normal feeder breaker opens
- No faults exist on the 5A bus.
- 21 EDG tripped after it attempted to auto start.

The cause of the start failure was due to low oil pressure.

Oil has been added and the diesel is now ready for restart. In order to restart the EDG, the NPO must:

- A. Reset the low pressure alarm and then manually restart the EDG.
- B. Cycle the 21 EDG manual start switch to 'STOP' and back to 'AUTO'.
- C. Place the control switch for breaker "5A" in the 'OPEN' position.
- D. Reset the 21 EDG lockout relay, the EDG will automatically restart when the 86 relay is reset.

Proposed Answer: D

Explanation (Optional): Must reset the 86 lockout relay and since an undervoltage condition exists on the bus-the EDG will automatically start.

Technical Reference(s): 2-ARP-003 Window 1-1 (Attach if not previously provided)  
2-SOP-27.3.1.1  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_ INPO-25035  
Modified Bank # X (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Beaver Valley Unit 1 Dec 2002 NRC Exam

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 7,10  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 1  |       |
|                                      | K/A 064 A3.01     | Ability to monitor automatic operation of the EDGs including automatic start of air compressors and EDG. |       |
|                                      | Importance Rating | 4.1  |       |

Proposed Question: Common 51

The Station Service Transformer No 5 high side breaker trips open. A Diesel trouble alarm is received in the control room.

Upon investigation the following local alarms and parameters are reported by the NPO:

- Over crank Alarm
- Low Starting Air Pressure Alarm
- Engine Air starting Pressure is 60 psig and lowering
- Starting Air Receiver Pressure is 250 psig and lowering.
- The air start compressor is not running

The starting air compressors should have been started by:

- A. The Non-SI Blackout signal
- B. Low Engine Starting Air Pressure Switch at 90 psig.
- C. Low Starting Air Receiver pressure at 275 psig.
- D. The Undervoltage signal on Bus 5A

Proposed Answer: C

Explanation (Optional):



| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 1  |       |
|                                      | K/A 073 K3.01     | Knowledge of the effect the loss or malfunction of the PRM will have on the following:<br>Radioactive Effluent releases. |       |
|                                      | Importance Rating | 3.6  |       |

Proposed Question: Common 52

R-45, AIR EJECTOR RADIOGAS HI RAD/TROUBLE has just alarmed. DRMS confirms alarm is for Hi RAD.

Based on these conditions, you should do which of the following:

- A. Verify MS-1132, Main Steam to Auxiliary Steam Reducer (Hogger Supply) Auto Closes.
- B. Isolate SG Blowdown
- C. Raise R-45 High Setpoint by ½ decade above present R-45 reading.
- D. Wait until R-49, STEAM GEN HI RAD/TROUBLE alarms, then implement 2-AOP-SG-1, SG Tube Leakage.

Answer: A

A is correct-

B is incorrect because it isolates on R-49.

C is incorrect because you only raise setpoint until the alarm clears.

D is incorrect because you implement based on R-45 .

Technical Reference(s): System Description (Attach if not previously provided)

ARP SAF-1 (Window 3-9)

Proposed References to be provided to applicants during examination: NONE

Learning Objective: (As available)

Question Source: Bank #

Modified Bank # (Note changes or attach parent)

New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X

Comprehension or Analysis

10 CFR Part 55 Content: 55.41 7,11

55.43

Comments:

|                                      |                   |  |       |
|--------------------------------------|-------------------|--|-------|
| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|                                      | Tier              | 2  | _____ |
|                                      | Group             | 1  | _____ |
|                                      | K/A 076 A4.04     | Ability to operate or monitor in the control room: emergency heat loads. |       |
|                                      | Importance Rating | 3.5  | _____ |

Proposed Question: Common 53

Which ONE of the following will cause a start of the Service Water Pump(s) selected for the Non-Essential Header?

- A. Operation of the SI recirculation phase switches.
- B. An SI signal with no station blackout.
- C. A unit trip with blackout and no SI.
- D. Low Non-Essential Header pressure.

Proposed Answer: A

Explanation (Optional):

Operation of Recirc Switch 2 will start a non-essential SW pump and a CCW Pump.

Technical Reference(s): ES-1.3 (Attach if not previously provided)

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Proposed References to be provided to applicants during examination: NONE



| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 1  |       |
|                                      | K/A 078 K4.02     | Knowledge of IAS design features and/or interlocks which provide the following: cross-over to other air systems. |       |
|                                      | Importance Rating | 3.2  |       |

Proposed Question: Common 54

Which of the following must be satisfied to cross-connect Service Air to Instrument Air inside the VC?

- A. Unit must be in hot shutdown and cross-connect valve must be manually opened.
- B. Control Room Supervisor Permission is required for connection of the temporary hoses for cross-connecting Service Air to Instrument Air.
- C. Must station an operator to be available to manually close the valve.
- D. Unit must be in cold shutdown and cross-connect valve must be manually opened.

Proposed Answer: D

Explanation (Optional):

- A. Is incorrect-Unit must be in cold shutdown.
- B. Is incorrect-Shift Manager approval and signature are required.
- C. Is incorrect. Configuration controlled by a temp alt.
- D. Is correct.

Technical Reference(s): 2-SOP-29.2

(Attach if not previously provided)

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Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 4  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 1  |       |
|                                      | K/A 103 A4.04     | Ability to monitor or operate in the control room: phase A and Phase B resets. |       |
|                                      | Importance Rating | 3.5  |       |

Proposed Question: Common 55

The following plant conditions exist:

- Maximum VC Pressure in the transient was 8 psig.
- RCS Pressure is 1200 psig
- RCS is saturated
- Pressurizer level is empty

What is the proper sequence to Reset Phase A/Phase B in the EOPs?

- Reset SI by depressing simultaneously the SI reset pushbuttons, simultaneously depress Reset Phase A pushbuttons. Phase B doesn't have to be reset.
- Reset SI by depressing pushbuttons one at a time, Reset Phase A by pushing reset pushbuttons one at a time, reset Phase B by pushing reset pushbuttons one at a time.
- Reset SI by depressing pushbuttons one at a time, and reset Phase A by pushing reset pushbuttons one at a time. Phase B doesn't have to be reset.
- Reset SI by simultaneously depressing the SI reset pushbuttons, simultaneously depress Reset Phase A pushbuttons, then simultaneously depress Reset Phase B pushbuttons

Proposed Answer: C

## Explanation (Optional):

- A. Is incorrect—depress pushbuttons one at a time to hear relays reset.
- B. Is incorrect- do not reset Phase B since it did not actuate.
- C. Is correct
- D. Is incorrect—depress relays one at a time to hear them reset. Phase B is not reset since it did not actuate.

Technical Reference(s): E-1 (Attach if not previously provided)

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Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

## Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X10 CFR Part 55 Content: 55.41 7,10  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 2  |       |
|                                      | K/A 011 A3.03     | Ability to monitor automatic operation of PZR LCS including charging and letdown |       |
|                                      | Importance Rating | 3.2  |       |

Proposed Question: Common 56

The plant is operating at 100% power when the controlling channel of the pressurizer level fails high.

As a results of this failure and assuming **NO** operator action and all other control systems function properly, the unit will ultimately trip due to:

- A. High Pressurizer Pressure
- B. Low Pressurizer Pressure
- C. Over Temperature Delta T
- D. High Pressurizer Level.

Proposed Answer: D

Explanation (Optional):

When the controlling channel fails high, initially all heaters will energize and charging flow will go to minimum. Actual pressurizer level will decrease and the alarm channel will isolate letdown and de-energize the heaters. Charging flow will still be at a minimum and pressurizer level will increase due to seal injection. Actual pressurizer level will increase. Sprays will control pressure. The unit will ultimately trip on high pressurizer level. Even though heaters are off pressurizer pressure will not decrease to cause an OTDT trip or a low pressurizer pressure trip.

Technical Reference(s): AOP-INST-1 (Attach if not previously provided)

IP2-SOD-007

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History: Salem Nov 2002 Exam

Question Cognitive Level: Memory or Fundamental Knowledge  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 7  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
|                                      | Tier              | 2   |       |
|                                      | Group             | 2   |       |
|                                      | K/A 016 G2.1.28#  | Knowledge of purpose and function of major components and controls. |       |
|                                      | Importance Rating | 3.2   |       |

Proposed Question: Common 57

Which of the following always occurs when AMSAC is actuated?

- A. Turbine Trips  
Both motor driven aux feed pumps start  
Blowdown/ Blowdown Sampling isolates only on SGs with level less than 7.5%.
- B. Turbine Trips  
All 3 AFW Pumps starts  
Blowdown isolates/ Blowdown Sampling isolates on all SGs.
- C. Reactor Trips  
All 3 AFW Pumps starts  
Blowdown isolates/ Blowdown Sampling isolates on all SGs
- D. Reactor Trips  
Both motor driven aux feed pumps start  
Blowdown/ Blowdown Sampling isolates only on SGs with level less than 7.5%.

Proposed Answer: B

Explanation (Optional):

- A. Is incorrect-All ABFPs start and all SGs are isolated.
- B. Is correct:
- C. Is incorrect AMSAC signal doesn't trip the reactor

D. Is incorrect. All ABFPs start, all SG are isolated. ,and no reactor trip signal is generated directly from AMSAC,

Technical Reference(s): IP-SOD-008 (Attach if not previously provided)  
2-ARP-FAF-window 1-5  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 7  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 2  |       |
|                                      | K/A 027 K2.01     | Knowledge of power supply to the iodine removal fans |       |
|                                      | Importance Rating | 3.1  |       |

Proposed Question: Common 58

The following plant conditions exist:

- Small Break LOCA has occurred.
- The team is performing a post LOCA cooldown and depressurization
- Containment Pressure peaked at 12 psig and is currently 5 psig
- Containment Radiation levels peaked at 3R/hr and are slowly lowering

The TSC has contacted the Control Room to determine the status of the Containment Iodine removal fans and has recommended that they be used to lower containment radiation levels.

Based upon their request, you would:

- Expect the Iodine removal fans to be running because they should have automatically started due to high radiation levels on R-25/R-26, Containment Radiation Monitors.
- Expect the Iodine removal fans to be running because they should have automatically started on high containment pressure.
- Expect to have manually started them when required in FR-Z.1, Response to High Containment Pressure.
- Expect them not to be running due to their MCC's being de-energized because of adverse containment conditions.

Proposed Answer: D

Explanation (Optional):

A and B are incorrect-Containment Iodine removal fans do not auto start.

C is incorrect because entry conditions for FR-Z.1 have not been met and the fans are started in FR-Z.3 and not FR-Z.1.

D is correct. Fans are powered off MCC-28/MCC-28A that are inside containment. Their respective MCCs are not energized under adverse containment conditions.

Technical Reference(s): FR-Z.3 (Attach if not previously provided)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History: Palisades NRC Exam Dec 2001

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis x

10 CFR Part 55 Content: 55.41 13  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | SRO |
|--------------------------------------|-------------------|--|-----|
|                                      | Tier              | 2  |     |
|                                      | Group             | 2  |     |
|                                      | K/A 029 K1.03     | Knowledge of physical connection and/o cause/effect relationship between the containment purge systems and the ESF system. |     |
|                                      | Importance Rating | 3.6  |     |

Proposed Question: Common 59

The plant is performing a plant cooldown to go on RHR. The plant is at 370 F and making preparations to place RHR in service.

A large break LOCA occurs. A containment ventilation isolation signal will send a signal to close the pressure relief isolation valves if they were open. The containment ventilation isolation signal is caused by a :

- A. Containment Phase A isolation Signal.
- B. Containment Phase B isolation Signal.
- C. Low Pressurizer Pressure SI signal
- D. Containment Pressure SI signal

Proposed Answer: A

Explanation (Optional):

- A. Is correct- Phase A isolation causes containment ventilation isolation
- B. Is incorrect –. Phase B isolation does not cause containment ventilation isolation.
- C. Is incorrect-This SI signal is blocked during the cooldown
- D. Is incorrect-The SAI signal does not cause the containment ventilation isolation signal.

Technical Reference(s): IP2-SOD-031 (Attach if not previously provided)

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Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 7,9  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
|                                      | Tier #            | 2   |       |
|                                      | Group #           | 2   |       |
|                                      | K/A 034 K6.02     | Knowledge of the effect of a loss or malfunction of the radiation Monitoring System will have on the Fuel Handling System |       |
|                                      | Importance Rating | 2.6   |       |

Proposed Question: Common 60

Unit 2 is in Mode 6 and has commenced core off-load. The following conditions exist:

- 21 EDG is OOS for overhaul
- A FSB Exhaust Fan is in service
- Containment purge system is in service
- Fuel Handling Building Radiation Monitor, R-5 is OOS.

Which of the following describes the required ACTION, if any, to be taken?

- A. Fuel movement in the spent fuel storage area must be suspended until an appropriate portable monitor is provided
- B. Core off-load cannot be conducted until R-5 is repaired.
- C. Fuel movement may continue for up to 7 days while restoring R-5 to operable status provided a portable monitor is provided.
- D. No action is required, fuel movements may continue uninterrupted

Proposed Answer: A

Explanation (Optional):

- A. Is correct.

- B. Is incorrect. You need only to establish alternative radiation monitoring capability.
- C. Is incorrect-No time restrictions after an alternative monitoring method is in place,
- D. Is incorrect. Must immediately suspend fuel movement.

Technical Reference(s): TRM 3.3.D (Attach if not previously provided)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X INPO-21442  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Braidwood NRC Exam July 2002

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 13  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 2  |       |
|                                      | K/A 035 K5.03     | Knowledge of the operational implications of the following as it applies to the SGs: shrink and swell. |       |
|                                      | Importance Rating | 2.8  |       |

Proposed Question: Common 61

Given the following conditions:

Unit 2 has just synched on line and is ramping past 15 % power.  
"22" reactor coolant pump trips.

Assuming no operator actions, "22" SG steam flow will \_\_\_\_\_ and "22" SG level will \_\_\_\_\_ . (Consider the immediate effects).

- A. rise; rise
- B. lower, lower
- C. rise, lower
- D. lower, rise

Proposed Answer: B

Explanation (Optional): When the RCP trips the RCS flow will decrease and the steam flow will decrease. When the colder water reverses through the core –the colder water will drop pressure ,cool off the SG, and the SG level will decrease.

Technical Reference(s): Generic Fundamentals \_\_\_\_\_ (Attach if not previously provided)

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Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 14  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
| 3                                    | Tier              | 2   |       |
|                                      | Group             | 2   |       |
|                                      | K/A 041 A3.05     | Ability to monitor the automatic operation of the Steam Dumps including Main Steam Header Pressure. |       |
|                                      | Importance Rating | 2.9   |       |

Proposed Question: Common 62

A plant startup is in progress and the team is preparing to synch the generator to the grid. The following conditions exist:

- Power Level is 12%
- Rod Control is in manual
- Steam dumps are in the pressure mode of control

Assume no other operator action, what is the plant response to a Main Steam Header Pressure Transmitter failure (PT-404) failing high.

- All 12 Steam Dump valves will go wide open, Tave will lower, and the plant will stabilize at a higher power level.
- All 12 steam dump valves will modulate open, the plant will cool down, and the unit will trip on NIS overpower trip at 20%.
- All 12 steam dump valves will modulate open, Tave will lower, and the unit will trip on high SG level when the level swells.
- All 12 steam dump valves will go wide open, plant will cooldown, unit will trip and safety injection will actuate.

Proposed Answer: D

Explanation (Optional):

- A. Is incorrect. Plant will trip.
- B. Is incorrect. The NIS overpower trip low is blocked.
- C. Is incorrect. The turbine would trip but not the reactor because you are below P-8.
- D. Is correct.

Technical Reference(s): 2-AOP-INST-1 (Attach if not previously provided)

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2-AOP-UC-1

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IP2-SOD-41

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Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 4,7,14

55.43 \_\_\_\_\_

Comments:

|                                      |                   |  |       |
|--------------------------------------|-------------------|--|-------|
| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|                                      | Tier              | 2  |       |
|                                      | Group 2#          | 2  |       |
|                                      | K/A 055 G2.4.11   | Knowledge of abnormal condition procedures |       |
|                                      | Importance Rating | 3.4  |       |

Proposed Question: Common 63

Which one of the following combinations of condenser vacuum conditions require an immediate reactor trip and turbine trip per 2-AOP-VAC-1, Loss of Condenser Vacuum, when operating greater than P-8?

|   | Condenser 21 | Condenser 22 | Condenser 23 | Exhaust Hood Temp    |
|---|--------------|--------------|--------------|----------------------|
| A | 25.6 in Hg   | 27.5 in Hg   | 26.5 in Hg   | 200 F for 5 minutes  |
| B | 26.0 in Hg   | 26.5 in Hg   | 29.7 in Hg   | 180 F for 3 minutes  |
| C | 27.2 in Hg   | 29.5 in Hg   | 29.8 in Hg   | 245 F for 12 minutes |
| D | 26.2 in Hg   | 25.7 in Hg   | 28.2 in Hg   | 180F for 6 minutes   |

Proposed Answer: B

Explanation (Optional):

IATT step requires a reactor trip, turbine trip when condenser vacuum less than graph, vac differential between condensers greater than 3.5 in Hg, Exhaust hood DT between condensers greater than 30F, Exhaust hood temperature greater than 250F, exhaust hood temp greater than 175F for greater than 15 minutes.

Technical Reference(s): AOP-VAC-1 IAAT step 4.1 (Attach if not previously provided)

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\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X Unit 3 ILO Bank  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 4,7  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 2  |       |
|                                      | Group             | 2  |       |
|                                      | K/A 068 A2.04     | Ability to (a) predict the impact of the following malfunctions or operation of the Liquid Radwaste System and (b) based upon those predictions use procedures to correct, control or mitigate the consequences of those malfunctions or operations failure of automatic isolation valves. |       |
|                                      | Importance Rating | 3.3  |       |

Proposed Question: Common 64

The liquid release is in progress. R-54, Liquid Radiation Monitor alarms.

The status of the Waste Distillate System is:

- The Waste Distillate Transfer Pump (WDTP) failed to trip
- The WDTP discharge valve remains open

Based upon the above you must:

- Terminate the release by locally isolating the discharge valve.
- Locally trip the WDTP and ensure the WDTP discharge valve closes.
- Prepare a new release permit for the unplanned release.
- Classify the event and implement the Emergency Plan.

Proposed Answer: B

Explanation (Optional):

A is incorrect because the release terminated when the header discharge isolation valve closed.  
B is correct. It takes local action to stop the pump and close the pump discharge valve.  
C is incorrect because the release is terminated.  
D is incorrect because no unplanned release occurred.

Technical Reference(s): 2-SOP-5.1.3 (Attach if not previously provided)

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\_\_\_\_\_  
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Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_ IP 2 Bank-Rem Exam 3  
Modified Bank # x (Note changes or attach parent)  
New \_\_\_\_\_

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 11  
55.43 \_\_\_\_\_

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier #            | 2  |       |
|                                      | Group #           | 2  |       |
|                                      | K/A 086 K6.04     | Knowledge of the effect of a loss or malfunction the FPS will have on fire, smoke, and heat detectors. |       |
|                                      | Importance Rating | 2.6  |       |

Proposed Question: Common 65

Which of the following will result in automatic actuation with IMMEDIATE discharge of its associated fire protection medium (i.e., water, halon, carbon dioxide)?

- A. 53 ft computer room is protected by a pre-actuation deluge system actuated by one ionization smoke detectors.
- B. Control Room Charcoal Filter deluge system is actuated by thermistor wires in zones.
- C. Main Boiler Feed Pumps are protected by foam actuated by a smoke detector.
- D. Station Aux Transformer protected by water system actuated by high temperature using a thermistor wire.

Proposed Answer: D

Explanation (Optional):

- A. Is incorrect. Two smoke detectors to actuate.
- B. Is incorrect. Manually actuated..
- C. Is incorrect. Manually actuated.
- D. Is correct..

Technical Reference(s): Lesson Plan (Attach if not previously provided)

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Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X INPO-19401  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Kewanee NRC Exam 2000

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 \_\_\_\_\_  
55.43 4,7

Comments:

|                                      |                   |  |       |
|--------------------------------------|-------------------|--|-------|
| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|                                      | Tier              | 3  |       |
|                                      | Group             |  |       |
|                                      | K/A 2.1.25        | Ability to obtain and interpretation reference material such as graphs, nomographs, and tables which contain performance data. |       |
|                                      | Importance Rating | 2.8  |       |

Proposed Question: Common 66

The plant is in MODE 1 with the following conditions:

|                           |          |
|---------------------------|----------|
| Reactor Power             | 8%       |
| Impulse Metal Temperature | 175F     |
| RCS Pressure              | 2235psig |

Using EL-2 determine the maximum roll rate (rpm/min) for the main turbine under these conditions assuming a linear ramp of main turbine speed?

- A. 60
- B. 90
- C. 120
- D. 180

Proposed Answer: B

Explanation (Optional):

Time to roll up the turbine to 1800 rpm is 20 minutes.

Thus roll rate is 1800 rpm/20 minutes=90 rpm

Technical Reference(s): EL-2 (Attach if not previously provided)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: EL-2  
2-SOP-26.4  
\_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X INPO-23477  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge  
Comprehension or Analysis X  
\_\_\_\_\_

10 CFR Part 55 Content: 55.41 4,10  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 3  |       |
|                                      | Group #           |  |       |
|                                      | K/A 2.1.10        | Knowledge of conditions and limitations of the facility license. |       |
|                                      | Importance Rating | 2.7  |       |

Proposed Question: Common 67

The limits on RCS activity provided in Technical Specifications are based on the dose that would be received at the site boundary in a SGTR accident. Maintaining these RCS activity limits ensures that the 2-hour dose at the site boundary during a SGTR will NOT exceed:

- A. 10 CFR 20 "Standards for Protection Against Radiation," limits
- B. 10 CFR 100, "Reactor Site Criteria," limits
- C. EPA Protective Action Guideline thresholds
- D. 5 Rem TEDE for the general public

Proposed Answer: B

Explanation (Optional):

Chapter 14 FSAR Results and Basis

Technical Reference(s): Chapter 14 FSAR

(Attach if not previously provided)

10CFR100 Site Criteria

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\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X INPO 18924  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 12  
55.43 \_\_\_\_\_

Comments: Braidwood NRC Exam June 2000

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 3  |       |
|                                      | Group #           |  |       |
|                                      | K/A 2.1.32        | Ability to apply all system limits and precautions |       |
|                                      | Importance Rating | 3.4  |       |

Proposed Question: Common 68

During power operation Tech Spec LCO 3.2.1 requires that Heat Flux Hot Channel Factor be maintained within the Limits set by the COLR.

How can the operators be assured that the Heat Flux Hot Channel Factor is being maintained within limits on a continuous basis?

- A. The Heat Flux Hot Channel Factor is not measurable, but inferred from a power distribution map using the incore detectors. The map is done every 31 days and if within limits it can be inferred that it has been within limits since last performed.
- B. The Heat Flux Hot Channel Factor is part of the core design and Westinghouse patterns the core design to ensure Heat Flux Hot Channel Factor will not be violated.
- C. Maintaining the core within the limits of AFD, QPTR, and control rod insertion limits controls the Heat Flux Hot Channel Factor.
- D. The NIS Channel Deviation will alarm if it goes above the setpoint limits and the operators will need to reduce power 1% for every percent above limits.

Proposed Answer:

C

Explanation (Optional): Tech Spec Bases

Technical Reference(s): TS (Attach if not previously provided)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X INPO 22507  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: October 2001 Diablo Canyon Exam

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content: 55.41 5,10,14  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
|                                      | Tier              | 3   |       |
|                                      | Group             |   |       |
|                                      | K/A 2.2.30        | Knowledge of RO duties in the control room during fuel handling such as alarms from the fuel handling area, communications with the fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation. |       |
|                                      | Importance Rating | 3.5   |       |

Proposed Question: Common 69

All of the following are the responsibility of the Reactor Operator in the control room during fuel handling **EXCEPT**:

- A. Apply and remove protection per tag outs.
- B. Coordinate the refueling activities during core alteration.
- C. Prepare work requests and radiation waste release permits.
- D. Initiate holds to ensure the required plant evolutions do not violate administrative controls (procedures and Tech Specs)

Proposed Answer: B

Explanation (Optional):

Technical Reference(s): OAP-1 (Attach if not previously  
provided)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X INPO 19589  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History: Clinton May 2001 NRC Exam

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_  
\_\_\_\_\_10 CFR Part 55 Content: 55.41 2,10  
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
|                                      | Tier              | 3   |       |
|                                      | Group             |   |       |
|                                      | K/A 2.2.24        | Ability to analyze the effects of maintenance activities on LCO status. |       |
|                                      | Importance Rating | 2.6   |       |

Proposed Question: Common 70

The following plant conditions exist:

- The plant is operating at 70% power.
- 23 EDG is OOS for a bearing replacement
- It has 24 hours remaining on its TS required action time.
- No other safeguards equipment is out of service.
- 21 MBFP trips
- 21 ABFP failed to auto start as required.

Based upon these plant conditions, and using the Technical Specifications provided, determine your required action:

- A. A 3.03 shutdown because of two inoperable Aux feed Trains. You have one hour to restore one ABFP train to operable or be in Mode 3 in an additional 6 hours.
- B. You declare only 21 ABFP inoperable and you now have 4 hour to restore the 23 EDG or 21 ABFP otherwise you must be Mode 3 in 6 hours.
- C. You do a safety function determination to see if a shutdown is required.
- D. You must declare both 21 and 23 ABFPs inoperable and you have to be in Mode 3 in 6 hours and in Mode 4 in 18 hours.

Proposed Answer: B

Explanation (Optional):

TS 3.7.5 C/

Technical Reference(s): TS 3.7.5 (Attach if not previously provided)

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Proposed References to be provided to applicants during examination: TS Section 7  
TS Section 8

\_\_\_\_\_

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New  X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis  X

10 CFR Part 55 Content: 55.41  8,10   
55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO  | X | SRO |
|--------------------------------------|-------------------|---|---|-----|
|                                      | Tier              | 3   |   |     |
|                                      | Group             |   |   |     |
|                                      | K/A 2.3.10        | Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure. |   |     |
|                                      | Importance Rating | 2.9   |   |     |

Proposed Question: Common 71

The following conditions exist for a job performed on a system:

- The general area radiation levels are 10 mrem/hr
- The hot spot in the room is a pipe elbow that has radiation levels of 100 mrem/hr
- The job will be performed near the hot spot area

Assuming transit time is the same for each case and all shielding placement is done at 100 mrem/hr, which ONE (1) of the following results in the LEAST amount of personnel exposure?

- The job is performed by 2 operators for 3 hours each on the job at the hot spot
- The job is performed by 2 operators for 2 hours each on the job at the hot spot and a third operator reading instructions in the general room area for 2 hours
- Two Radiation Control personnel hang and remove 1 tenth thickness of lead shielding on the hot spot in 1.5 hours on the job. The job is performed after the lead shielding is in place by using 2 operators for 3 hours each.
- The job is performed by 3 operators for 1 hour each on the job at the hot spot and a fourth operator reading instructions in the general area room for 1 hour.

Proposed Answer: D

Explanation (Optional):

- A. Is incorrect. Total is 600 mrem.
- B. Is incorrect. Total exposure is 420 mrem.
- C. Is incorrect. Total is 360 mrem.
- D. Is correct. Total is 310 mrem.

Technical Reference(s): \_\_\_\_\_ (Attach if not previously provided)  
 \_\_\_\_\_  
 \_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X INPO-23436  
 Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
 New \_\_\_\_\_

Question History: Indian Point 3 March 2003 Exam

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
 Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 12  
 55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X SRO |
|--------------------------------------|-------------------|--|-------|
|                                      | Tier              | 3  |       |
|                                      | Group             |  |       |
|                                      | K/A 2.3.1         | Knowledge of 10CFR20 and related facility radiation requirements |       |
|                                      | Importance Rating | 2.6  |       |

Proposed Question: Common 72

Given that a 22 year old NPO is working in a radiation field under the following conditions:

The operator's cumulative dose for the year is 940 mrem.

Job is in a 20 mrem/hr radiation area

No dose extension has been authorized.

How many hours may the operator work in the radiation area without exceeding the administrative limit for the year?

- A. 3 hrs
- B. 53 hrs
- C. 103 hrs
- D. 203 hrs

Proposed Answer: B

Explanation (Optional):

Admin limit is 2000mrem/yr. Thus allowed  $2000-940=1060\text{mr}/20\text{mr/hr}=53$  hours

Technical Reference(s): GET (Attach if not previously provided)

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\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # X INPO-20512  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New \_\_\_\_\_

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 12  
55.43 \_\_\_\_\_

Comments: Clinton NRC Exam July 2001

| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|--------------------------------------|-------------------|---|-------|
|                                      | Tier              | 3   |       |
|                                      | Group             |   |       |
|                                      | K/A 2.4.35        | Knowledge of local auxiliary operator tasks during emergency including system geography and systems implications. |       |
|                                      | Importance Rating | 3.3   |       |

Proposed Question: Common 73

The following plant conditions exist:

- A SGTR is in progress on 21 SG.
- The team has transitioned to E-3 to mitigate the SGTR.
- Feedwater flow was isolated to the 21 SG when NR level rose above 10%.

The OTC attempted to shut the MSIV on 21 SG. The 21 MSIV failed to close. The remaining MSIVs for 22,23,24 SGs were successfully closed from the control room. The control room team should direct the NPO to:

- A. Shut the 21 MSIV locally per 2-AOP-SSD-1, Control Room Inaccessibility Safe Shutdown Control.
- B. Close 21 and 22 MBFP stop valves, Air ejector stop valve, Gland seal regulator stop valves.
- C. Locally isolate the condenser steam dump valves.
- D. Locally isolate 21 SG atmospheric.

Proposed Answer: B

Explanation (Optional):

- A. Is incorrect. E-3 shuts the MSIV on the non-affected SGs if they fail to isolate from the control room.
- B. Is correct.
- C. Is incorrect: They are closed only if they fail to close from the control room.
- D. Is incorrect. Don't want the SG safety to lift.

Technical Reference(s): E-3 (Attach if not previously provided)

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Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 10,12

55.43 \_\_\_\_\_

Comments:

| Examination Outline Cross-reference: | Level             | RO   | X | SRO |
|--------------------------------------|-------------------|--|---|-----|
|                                      | Tier              | 3  |   |     |
|                                      | Group             |  |   |     |
|                                      | K/A 2.4.23        | Knowledge of bases for prioritizing emergency procedure implementation during emergency operation. |   |     |
|                                      | Importance Rating | 2.8  |   |     |

Proposed Question: Common 74

The following plant conditions exist:

- A SGTR exists on 21 SG
- A loss of off-site power occurred when the unit tripped.
- All EDGs started
- All ESF equipment functioned as designed.

The team has identified, isolated and has cooled down the ruptured SG to the target point. During the depressurization using the PORVs, a red path on Integrity occurs based on 21 Tcold.

Based upon these changing plant conditions, the control room team should:

- A. Immediately transition to FR-P.1 to respond to the imminent challenge to Reactor Vessel Integrity.
- B. Continue on in E-3 to mitigate the SGTR. If the red path still exists for twenty-five minutes when E-3 is complete, then the crew should transition to FR-P.1.
- C. Continue in E-3 to mitigate the SGTR because the Tcold indication is not an accurate reading and PTS is not being challenged. FR-P.1 does not have to be implemented at this time.
- D. Continue on in E-3 to mitigate the SGTR while concurrently implementing FR-P.1.

Proposed Answer: C

Explanation (Optional):

Caution in E-3 addresses the priority that should set during a SGTR with off-site power. This special case is also addressed in E-3 background document and in OAP-12, EOP Rules of Usage. Actions in FR-P.1 will not address the off-site dose limitations if the SGTR is not mitigated. When the SGs are uncoupled from the loops when the PORV is open this also causes a false PTS signal. When the PORV is closed and natural circulation is established the PTS condition should clear.

- A. Is incorrect-Caution states to remain in E-3.
- B. Is incorrect –If red path still exists after normal charging and letdown are established-then you would transition to FR-P.1.
- C .Is correct.
- D. Is incorrect-Don't do procedures concurrently.

Technical Reference(s): E-3 (Attach if not previously provided)

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Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_

Modified Bank # \_\_\_\_\_ (Note changes or attach parent)

New X

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge \_\_\_\_\_

Comprehension or Analysis X

10 CFR Part 55 Content: 55.41 10

55.43 \_\_\_\_\_

Comments:

|                                      |                   |   |       |
|--------------------------------------|-------------------|---|-------|
| Examination Outline Cross-reference: | Level             | RO  | X SRO |
|                                      | Tier              | 3   | _____ |
|                                      | Group #           | _____                                       | _____ |
|                                      | K/A 2.4.19        | Knowledge of EOP layout, symbols, and icons |       |
|                                      | Importance Rating | 2.7   | _____ |

Proposed Question: Common 75

Which ONE (1) of the following describes the purpose of an asterisk (\* within a circle) next to a procedure step in the EOP network?

- A. Identifies steps that are on the foldout page.
- B. Identifies steps with subtasks that may be performed in any order
- C. Identifies steps that are continuous action steps applicable throughout the specific procedure
- D. Identifies steps that are continuous actions steps throughout all the procedures.

Proposed Answer: D

Explanation (Optional):

- A. Is incorrect. Foldout steps are not designated within the procedure.
- B. Is incorrect. These steps are identified with bullets.
- C. Is incorrect. These are steps identified by an asterisk only.
- D. Is correct.

Technical Reference(s): OAP-12 \_\_\_\_\_ (Attach if not previously provided)  
\_\_\_\_\_  
\_\_\_\_\_

Proposed References to be provided to applicants during examination: NONE

Learning Objective: \_\_\_\_\_ (As available)

Question Source: Bank # \_\_\_\_\_  
Modified Bank # \_\_\_\_\_ (Note changes or attach parent)  
New x

Question History:

Question Cognitive Level: Memory or Fundamental Knowledge X  
Comprehension or Analysis \_\_\_\_\_10 CFR Part 55 Content: 55.41 10  
55.43 \_\_\_\_\_

Comments:

